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Draft Environmental Impact Statement



General Management Plan


FORT DAVIS

National Historic Site • Texas

UNIVERSITY OF GEORGIA

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Draft Environmental Impact Statement



General Management Plan **FORT DAVIS** National Historic Site • Texas

SUMMARY:

The general management plan would guide the management of the Fort Davis National Historic Site for the next 10 to 15 years. Four alternatives were considered—a no-action and three action alternatives, including the National Park Service proposal. The proposed general management plan would retain most existing visitor experiences and would improve outreach programs, visitor orientation, collaborative research partnership opportunities, and administrative staff services. It also would provide for enhanced protection of facilities and resources from flooding. The environmental impact statement assesses impacts to visitor experience, archeological resources, cultural landscapes, historic resources, long-term health of natural ecosystems, economic contribution to local communities, adjacent landowners, and facility/operational efficiency. The plan also identifies cumulative effects on wetlands and floodplains for the National Park Service proposal.

Direct questions and send comments to:

Superintendent
Fort Davis National Historic Site
P.O. Box 1456
Fort Davis, Texas 79734



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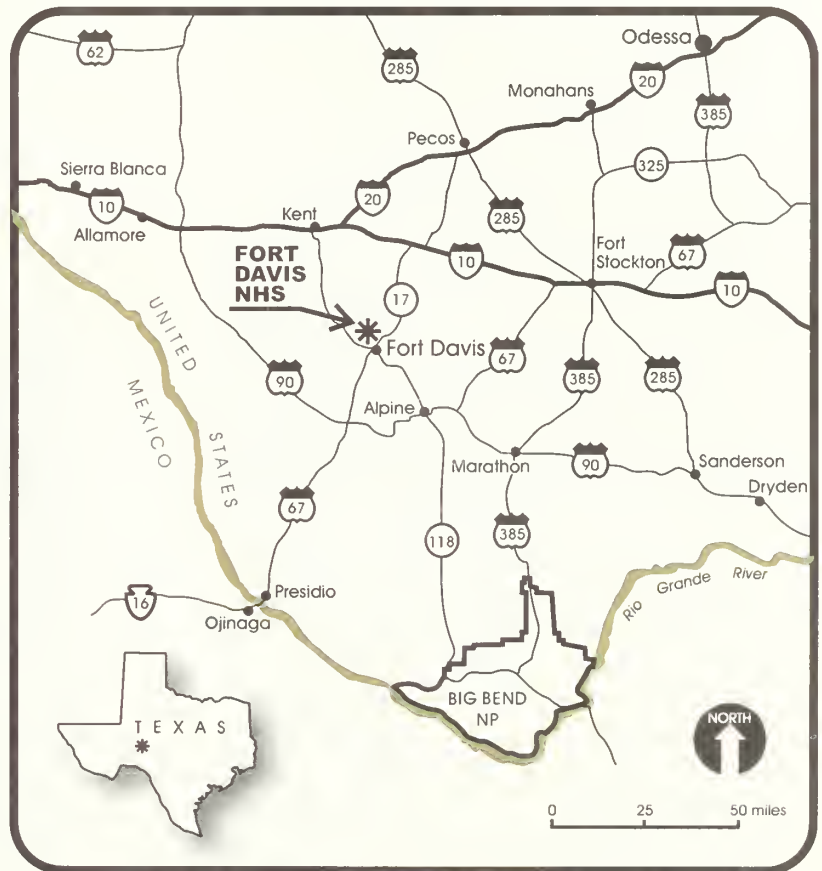
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PURPOSE OF AND NEED FOR THE PLAN

INTRODUCTION

Fort Davis National Historic Site (NHS) is located on Texas State Highways 17/118 on the northern edge of the town of Fort Davis. It is situated at the eastern side of the rugged Davis Mountains, approximately 200 miles southeast of El Paso, Texas, and 180/160 miles southwest of Midland/Odessa, Texas, respectively. In its currently preserved condition, Fort Davis symbolizes the era of westward migration and the essence of the late 19th-century U.S. Army. The park preserves the historic buildings, ruins, foundations, and landscape associated with two forts (1854–1862 and 1867–1891). In so doing, it makes this valuable part of America's heritage available to thousands of visitors annually for their enjoyment, understanding, education, and appreciation.



PURPOSE OF THE PLAN

The National Parks and Recreation Act of 1978 tasked the National Park Service to prepare general management plans (GMPs) for all national park units. The purpose of the general management plan is:

- To clearly describe specific resource conditions and visitor experiences in various management units throughout the park and
- To identify the kinds of management, use, and development that will be appropriate to achieving and maintaining those conditions.

The accompanying environmental documentation for Fort Davis NHS provides sufficient information to evaluate alternatives and provide the basis for a record of decision (ROD) documenting the NPS's choice of a preferred action.

NEED FOR THE PLAN

Fort Davis NHS has an outdated 1962 master plan. The GMP is needed to establish the basic management philosophy of the park and to provide a rationale for making management decisions that affect the park's resources and the visitors' experience of the site.

President John F. Kennedy authorized Fort Davis National Historic Site on September 8, 1961. Public Law 87-213 stated that no more than 460 acres be acquired for the purposes of establishing a national historic site. Approximately 14 acres were added to the park by donation in 1999 (authorized on November 6, 1998, by Public Law 105-355 Section 506). The fort lands are listed in the National Register of Historic Places and are classified and managed as a historic zone, in accordance with the National Park Service Management Policies (1988). The 1988 policies direct that physical development shall be the minimum needed to preserve, protect, and interpret historical values and shall not detract from or adversely affect these values.

The final plan, when completed, will set forth the basic management philosophy for the park. This document includes measures for the preservation of the area's resources, indications of the types and general intensities of development (including visitor circulation and transportation patterns, systems, and modes) associated with public enjoyment and use of each area, and the first steps in identifying visitor carrying capacities.

This document also discloses the potential environmental consequences, as far as can be determined by a conceptual plan, that may result from implementation of various alternatives. It documents the process used by the National Park Service in preparing a general management plan.

THE PLANNING PROCESS

The planning process builds upon the logic established for national parks, starting with all laws, regulations, and policies applicable to the national park system. The proposed action and alternatives displayed in this document are based on each unit's purpose and significance. Alternatives in the plan have

three common components—the **vision**, the **desired future conditions**, and the **management prescriptions**. Each alternative addresses the desired future conditions in a different way.

The vision is a short narrative that describes the park's desired future condition. It is meant to stand the test of time and reflect the park's purpose and significance. It expresses the management philosophy for the park and describes what the park is to be like in the future.

Desired future conditions capture the essence of the vision, providing clarity and priorities. These objectives are issue-, resource-, or geographic-specific. They may include products to be produced or conditions to be attained or maintained. As a whole, objectives are interrelated and interdependent. The desired future conditions provide a basis for allocating resources and describing regions in the park.

Management prescriptions are geographically based. Prescriptions describe characteristics of the management region for which they were developed and define the outputs, activities, and projects for that region. The rationale for defining regional boundary delineations is included in this planning document.

Management prescriptions for each region are based on the character and condition of the resource involved. They are not only tied to local or park-wide needs but also take into consideration factors beyond park boundaries. A menu of available management prescriptions is developed. Each alternative revolves around a common theme, and the same set of prescriptions is applied differently over park lands, depending on the theme of the alternative. Themes set the basis for developing distinctly different alternatives that provide a variety of visitor experience options.

The plan provides general guidance and is not detailed, specific, or highly technical in nature. Highly technical environmental analysis is done when funds become available to design facilities, if prescribed by the management plan, when site-specific impacts can be addressed. All undertakings are subject to Section 106 review and compliance prior to implementation.

THE NATIONAL PARK SYSTEM

The national park system represents our national heritage and includes a collection of the nation's most outstanding and significant natural, cultural, historic, and recreational resources. Each unit contains resources and values that make it something special and nationally significant. Fort Davis NHS fulfills a particular "niche" in the national park system. The place filled by each park is defined by its **park purpose**.

The National Park Service's mission of conserving resources—whether they be natural, cultural, historic, or recreational—recognizes the importance of preservation as an active management tool. This preservation principle respects both natural and human relationships and emphasizes the value of maintaining land for the purpose of preserving natural ecosystems, historic significance, and outstanding recreational opportunities.

Balanced against the protection and preservation of these resources is the value of public enjoyment by present and future generations. Human use often can threaten the very resources that the National Park Service is entrusted to protect. Many public debates have revolved around the balancing of these two National Park Service purposes. Whether it is telling a story or carefully protecting resources, the Service uses the principles of human and natural management to accomplish its mission.

But at the very least, "these areas derive increased national dignity and recognition of their superb environmental quality through their inclusion jointly with each other in one national park system managed for the benefit and inspiration of all people." (16 USC 1a-1; 1970)

PARK PURPOSE

Each park in the national park system is established for a specific purpose. The reason or reasons why Fort Davis National Historic Site was incorporated into the system is called its **park purpose**. The park purpose reflects current scientific or scholarly inquiry and interpretation. Purpose statements are based on enabling legislation and legislative history. Other legislation that affects each park unit includes, but is not limited to, the 1916 Organic Act for the National Park Service, National Environmental Policy Act, Historic Preservation Act, and the Endangered Species Act. The following purpose statements reflect the mandates and legislative intent for the creation of Fort Davis NHS. (See Appendix 1 for legislation.)

- Perpetuate and conserve the cultural and natural resources of Fort Davis NHS
- Educate the public about the influence of Fort Davis on the development and settlement of the Southwest and about the impact of military operations on American Indians

PARK SIGNIFICANCE

Each significance statement captures the essence of Fort Davis National Historic Site's importance to our nation's natural and cultural heritage. Together, they describe the distinctiveness of the resources, distinguishing Fort Davis National Historic Site as one of the units in the national park system that offers a

unique experience within a regional, national, and global context.

The significance statements identify the exceptional values and resources that must be preserved and maintained to achieve the purpose of the park. These statements also help park managers set resource protection priorities and identify primary park interpretive themes and desirable visitor experiences.

- Fort Davis is one of the best remaining examples in the Southwest of a typical post–Civil War frontier fort because of the extent of the surviving structures and ruins.
- Fort Davis provides an excellent opportunity for understanding and appreciating the important role played by African Americans in the West and specifically in the frontier army, because Black troops served at the post from 1867 to 1885.
- Fort Davis provided essential troops and supplies to the Victorio Campaign, which ended meaningful resistance of Apache bands in the Trans-Pecos.
- The historic integrity and character of the military post have not been significantly altered since its establishment. Much of the landscape immediately adjacent to the post has experienced little visible change.
- Fort Davis was strategically located to defend the Trans-Pecos portion of the San Antonio–El Paso Road and the Chihuahuah Trail. This encompassed controlling activities on the southern portions of the Great Comanche War Trail and Mescalero Apache War Trails.

SPECIAL MANDATES

Historic District

Fort Davis structures are listed in the National Register of Historic Places as a historic district. The entire district includes 110 buildings; of these 5 are restored and refurnished, 21 are roofed structures, and 84 are ruins. The National Historic Preservation Act requires the NPS to ensure that any federally funded or licensed undertaking is implemented only after careful consideration of its possible impacts on properties listed on the National Register.

Servicewide Law and Policies

Management and operations within NPS units are governed by many laws, regulations, policies, and guidelines. The following are those that apply to this planning effort:

- National Park Service Organic Act
- National Environmental Policy Act
- National Historic Preservation Act
- Archeological Resources Protection Act
- American Indian Religious Freedom Act
- Native American Graves Protection and Repatriation Act
- Endangered Species Act
- E.O. 11988: Floodplain Management
- E.O. 11990: Wetlands Protection
- Federal Water Pollution Control Act
- Clean Air Act
- Architectural Barriers Act
- Rehabilitation Act
- Americans with Disabilities Act

PLANNING PROCESS

The planning process began in February 1997. Initial scoping activities were conducted, which included public meetings and issuance of a press release. Additional meetings to update the public on the planning process were also held in April and June 1998.

A notice of intent for an environmental impact statement was published in the **Federal Register** on November 19, 1998. A public comment period followed, ending on February 15, 1999. A web site was established at the following address to facilitate making information about the planning process available to the public.

<http://www.nps.gov/planning/foda>

A newsletter invited the public to share their thoughts on the future of Fort Davis NHS, and a total of 27 responses were received. News releases updating area residents on the GMP process were also sent to nearby newspapers. General issues to be considered by the plan included:

- How can we best protect and preserve park resources and at the same time provide for a quality visitor experience?
- What kinds of management, use, and development are appropriate in order to achieve these conditions?

Vision for the Future

Set in the rugged beauty of the Davis Mountains, Fort Davis is one of America's best surviving examples of an Indian Wars' frontier military post in the Southwest. Echoes of bugle calls and the haunting sounds of a dress retreat parade help visitors envision what life was like in the late 19th century at this frontier fort.

Treading close to its ruins and wandering through its restored and refurnished buildings, visitors experience a segment of history interwoven in every American's heritage. Balanced interpretive programs reflect the cultural diversity of those who once lived here. Fort Davis is, indeed, a living classroom where opportunities abound for exploration, enlightenment, and inspiration.

The future of Fort Davis is within the bounds of past preservation and restoration. Resources are protected without compromising the historic scene. The National Park Service manages Fort Davis National Historic Site and has accepted the challenges to preserve it for future generations. Partnerships with local communities and especially with the Friends of Fort Davis NHS allow for the attainment of goals.

Our children's children will be able to learn from and enjoy this park because its resources are protected and its history interpreted with accuracy. In the words of former President Lyndon B. Johnson:

"If future generations are to remember us with gratitude rather than contempt, we must leave them more than miraeles of technology. We must leave them a glimpse of the world as it was in the beginning not just after we got through with it."

GPRA MISSION GOALS

The Government Performance and Results Act of 1993 (GPRA) was enacted to make government more effective and efficient. Planning for this GMP is consistent with the following Mission Goals established for GPRA.

Category I: Preserve Resources

- Mission Goal Ia: Natural and cultural resources and associated values of Fort Davis NHS are protected, restored, and maintained in good condition and managed within their broader ecosystem and cultural context.
- Mission Goal Ib: The National Park Service at Fort Davis NHS contributes to knowledge about natural and cultural resources and associated values; management decisions about resources and visitors are based on adequate scholarly and scientific information.

Category II: Provide for the Public Enjoyment and Visitor Experience

- Mission Goal IIa: Visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of Fort Davis NHS facilities, services, and appropriate recreational opportunities.
- Mission Goal IIb: Fort Davis NHS visitors, and the general public, understand and appreciate the preservation of the park and its resources for this and future generations.

Category IV: Ensure Organizational Effectiveness

- Mission Goal IVa: The National Park Service at Fort Davis NHS uses current management practices, systems, and technologies to accomplish its mission.
- Mission Goal IVb: The National Park Service at Fort Davis NHS increases its managerial resources through initiatives and support from other agencies, organizations, and individuals.

DESIRED FUTURE CONDITIONS

Desired future conditions (DFC) further refine management objectives and GPRA goals. For each desired future condition, the corresponding GPRA Goal is shown in parenthesis.

Prime Resource

Prime resource lands are defined as those resources that made a direct contribution to establishing the park as a unit of the national park system and are related to the park's purpose and significance. Other lands within the park are also important to protecting and supporting the prime resource, but are not considered to be the prime resource.

The historic resources, features, and objects are considered the prime resource of the park.

“For nearly four decades Fort Davis stood as a bastion of Anglo-American civilization in West Texas. The post guarded roads and trails, served as a mobilization point for Indian campaigns, and by its presence provided impetus for settlement of the region of the upper Rio Grande. Fort Davis provided a viable military continuum in the area from 1854 to 1891, alternatively serving a variety of military purposes. During the early years of the Civil War Confederate troops occupied the fort; from mid-1862 until 1867 it went ungarrisoned. In the latter year Fort Davis was rebuilt and reoccupied by the United States Army. After abandonment in 1891, the structures composing the post languished for seventy years until the National Park Service acquired the property and established Fort Davis National Historic Site.”
(Historic Resource Study, 1986)

The following resource-, geographic-, and issue-specific Desired Future Conditions apply to Fort Davis NHS.

Resource-Desired Future Conditions

CURATORIAL—Provide high-quality artifact preservation and exhibits (Ia, Ib)

Conditions to be attained/maintained:

- 1) NPS standards for storage of artifacts are met.
- 2) Objects are professionally conserved, catalogued, and preserved.
- 3) Alternative sources of funding, staffing, and outside partnerships are explored.
- 4) Display space for curatorial resources is of high quality and is appropriate for telling the park story.

ARCHEOLOGY—Protect and Preserve all Archeological Resources (Ia)

Conditions to be attained/maintained:

- 1) A comprehensive archeological survey has been completed.
- 2) Archeological resources are identified, inventoried, and protected.
- 3) Information gained from archeological sites is shared with the public.

INTERPRETATION—Provide high-quality interpretive services that inspire visitors (IIb)

Conditions to be attained/maintained:

- 1) The story of Fort Davis is told from the perspective of the military, civilians, Buffalo Soldiers, Native Americans and other cultures associated with history of the fort.
- 2) High-quality personal services and interpretive programs are provided.
- 3) Special educational programs and services are offered.
- 4) A vital component of the interpretive message contains information on the protection and preservation of resources.
- 5) Accurate and quality living history programs connect visitors to the story of Fort Davis.
- 6) Interpretive media and nonpersonal services enhance visitors' understanding and knowledge of the significance of the park.
- 7) Information on natural resources is provided.

OUTREACH—Use the internet to provide comprehensive information about Fort Davis (IIb)

Conditions to be attained/maintained:

- 1) An educational web site is available that provides curriculum-based materials for teachers.
- 2) A "Buffalo Soldiers" web site provides accurate and in-depth information at it relates to the history of Fort Davis.
- 3) Fort Davis NHS home page provides a broad spectrum of information for the visitor.

OUTREACH—Provide effective and quality outreach programs to the general public (IIb)

Conditions to be attained/maintained:

- 1) The story of Fort Davis understood by school children throughout west Texas.
- 2) Partnerships broaden the ability of the park to provide the story of Fort Davis to the general public.
- 3) A high-quality study/research facility is available to the public for historical research.

HISTORIC FABRIC—Conserve and protect the historic fabric of Fort Davis (Ia)

Conditions to be attained/maintained:

- 1) The historic structures and ruins are conserved, minimizing impacts on the original fabric.
- 2) Stabilization is used as a treatment to prevent loss of the original fabric. The treatment is compatible with the original fabric and based on current research.
- 3) The exterior appearance and integrity of the structures and ruins are not compromised through inappropriate conservation treatments.
- 4) A comprehensive database provides information on all known structures, ruins, and sites.

CULTURAL LANDSCAPE—Manage the cultural landscape (Ia, Ib)

Conditions to be attained/maintained:

- 1) The cultural landscape inventory and plan are completed.
- 2) The cultural landscape plan is considered in the management of Fort Davis.

PROTECTION—Protect park resources (Ia, IIa)

Conditions to be attained/maintained:

- 1) All historic structures and ruins are protected from adverse impacts.

- 2) The park is managed to provide a safe environment. This includes safety for visitors, employees, and volunteers.
- 3) Fire suppression is fully sufficient to protect the resource.
- 4) Facilities and contents are secured and protected.
- 5) Visitor use is managed to protect the cultural and natural environment.
- 6) Plants, wildlife, and cultural resources are protected.

FACILITIES—Provide facilities that meet visitor and staff needs (Ia, IIa, IIb)

Conditions to be attained/maintained:

- 1) Facilities meet ADA standards where practical.
- 2) Adequate storage and work space exists for all operations, meeting all laws and mandates where applicable.
- 3) Museum and interpretive exhibits are modernized and updated using state-of-the-art technology.
- 4) Adequate parking is provided.
- 5) Space in the visitor center enhances the visitors' experience.
- 6) Nature trails meet visitor, educational, and safety needs.
- 7) Facilities, such as rest rooms, meet basic needs of staff and visitors.

ADJACENT LANDS—Protect the historic scene from incompatible development on adjacent land (Ia)

Conditions to be attained/maintained:

- 1) NPS values and goals are shared and understood by park stakeholders.
- 2) NPS considers opportunities that may present themselves to acquire adjacent land that fits within the management goals for the park.

PARTNERSHIPS—Develop strong partnership programs (IVb)

Conditions to be attained/maintained:

- 1) A strong and vibrant friends group supports the park and helps it meet its mission and goals.
- 2) Programs with academic institutions are established to provide additional research and resources to the park.
- 3) The park partners with private institutions and organizations that support park goals.
- 4) The park maintains a viable professional group of volunteers.
- 5) The park maintains a strong partnership with the Davis Mountains State Park.
- 6) The park partners with local, county, other state, and federal agencies to share resources and experiences.

AIR QUALITY—Maintain the best possible air quality (Ia)

Conditions to be attained/maintained:

- 1) Facilities and activities within the park are in compliance with the Clean Air Act requirements.
- 2) The park strives to raise the level of awareness of the importance of air quality to park resources.

FLASH FLOOD MITIGATION—Mitigate the flood threat (Ia, Ib, IIa)

Conditions to be attained/maintained:

- 1) Park resources and visitors are protected from flooding.
- 2) A flash flood mitigation plan is in place.
- 3) Flood mitigation measures are sympathetic to historic features.

NOISE AND OVERFLIGHTS—Minimize inappropriate noise and overflight (Ia, IIa, IIb)

Conditions to be attained/maintained:

- 1) Inappropriate sound and noise are minimized to enhance the visitors' opportunities to experience historical sounds in the park.
- 2) The park strives to minimize overflight effects from extreme vibrations that may damage park resources.

Geographic

These areas refer to the Resource Opportunity Areas described in the Visitor Experience and the Environmental sections.

FOREGROUND—Protect the viewshed and natural features (Ia)

Conditions to be attained/maintained:

Views into the park remain natural and undeveloped (this excludes residential/maintenance area on the park boundary).

- 3) The cottonwood grove is protected and propagated.

HISTORIC CORE—Provide sights and sounds that enhance visitor experience (IIa, IIb)

Conditions to be attained/maintained:

- 1) Natural quiet is desirable.
- 2) Military sounds are broadcast.
- 3) Living history is a core interpretive program.

HISTORIC CORE—Protect the historic scene (Ia)

Conditions to be attained/maintained:

- 4) The fort's historic appearance is maintained through appropriate preservation management.

BACKDROP—Protect and maintain the natural environment (Ia)

Conditions to be attained/maintained:

- 1) No visual intrusions are evident.
- 2) Natural systems are protected.
- 3) Nonnative species are identified, mitigated, and managed to the extent possible.

THE PROPOSAL AND ALTERNATIVES

VISITOR EXPERIENCE AND THE PARK ENVIRONMENT

Beyond the resource management plan that identifies specific needs relative to individual program areas, such as natural and cultural resources, an overall resource management strategy to protect park resources needs to be developed. This enables the park to begin monitoring conditions and to ensure that the goals related to resource management and visitor use can be achieved. The development of the Resource Opportunity Area concept is the first step in incrementally moving the park toward the goal of addressing “carrying capacity.” It also helps to define the “suitability” of park lands for the application of management prescriptions.

Parks are composites of a variety of important cultural and natural resources. People value parks for many reasons—inspirational, educational, aesthetic, recreational, scientific, spiritual, and economic, among others. Significant differences relating to resource values and visitor use usually exist within different areas of a park. The uniqueness of these various areas and their relationship to one another, as well as to lands beyond the park boundary, influence visitor use and management of the park. In order to describe the park’s affected environment, to outline a set of alternatives, and to ultimately assess impacts on the resource, the resource values of the park must be identified and categorized.

These pieces of the park, which may extend beyond the boundaries of the park, are called resource opportunity areas (ROAs). The evaluation of these areas requires the involvement of public and private interests in the area. The ROAs are referenced in the environmental

consequences section and help to describe how park resources and visitor experiences may be affected.

At Fort Davis there are three distinct ROAs— Foreground, Historic Core, and Natural Backdrop. Each contributes in a different way to how people use the resources of the site.

It is important to incrementally plan ROAs for the protection of park resources from visitor overuse. ROAs illustrate how visitors might relate to and use park resources and point out the relative importance of each area to the whole. They also provide the basis for understanding visitor experiences available within a park. At the same time, the physical resources and visitor experiences are related to the park’s purpose and significance.

ROAs identify sensitive resources where damage can occur from overuse. By identifying important resources and visitor experiences, ROAs complete the first steps needed to define carrying capacity and to protect park resources from overuse. Future VERP (Visitor Experience and Resource Protection) planning will eventually define carrying capacities needed to protect resources. Each resource opportunity area includes a brief description of the following:

- Outstanding examples of historic, natural, scenic, geological, ecological, floral, faunal, and recreational values for which the park was established.
- Populations of rare plants and animals that are particularly vulnerable because of their small population sizes and genetic isolation.
- Habitats necessary for the survival or reintroduction of federal- or state-recognized threatened or endangered species or candidate species being considered for listing.

- Resources that are unusually sensitive to human use.
- Major known archeological or important historical resources.

Resource Opportunity Areas

Resource opportunity areas (ROAs) are geographic delineations of the national historic site that contain similarities of character and resource values. Although there may be some characteristics shared among ROAs, other characteristics will be unique to one ROA.

Foreground ROA

This ROA can be described as a grassland environment common to the Davis Mountains, with a small riparian area. It provides visitors with the first glimpses of the fort from State Highways 17 and 118. Within this area, a historic grove of cottonwood trees provides visitors with a shaded area, a pleasant spot for a picnic.

Historic Core ROA

The Historic Core ROA provides the visitor with opportunities to view Fort Davis's abundant historic resources and to learn about the history of the fort. The historic buildings, ruins, foundations, and sites provide visitors access to the history of the first and second forts. Military sites and sounds help visitors to imagine what it would have been like during the period when Fort Davis was an active military post. The parade ground and cultural landscape give visitors an experience of times past. Remnants of the San Antonio–El Paso Road, company streets, and historic roads within the fort can be seen.

Because the fort is in the middle of an alluvial floodplain, natural drainages run through this ROA. Historic flood control features, such as ditches and dikes, originally built by the military for flood protection, are also present. In addition, the area contains grassland and scrub oak.

Other historic resources located in this ROA that supported fort activities are garden sites, a wood yard, a pump house, laundress's quarters, a lime kiln, a spring, and remnants of the San Antonio–El Paso Road.

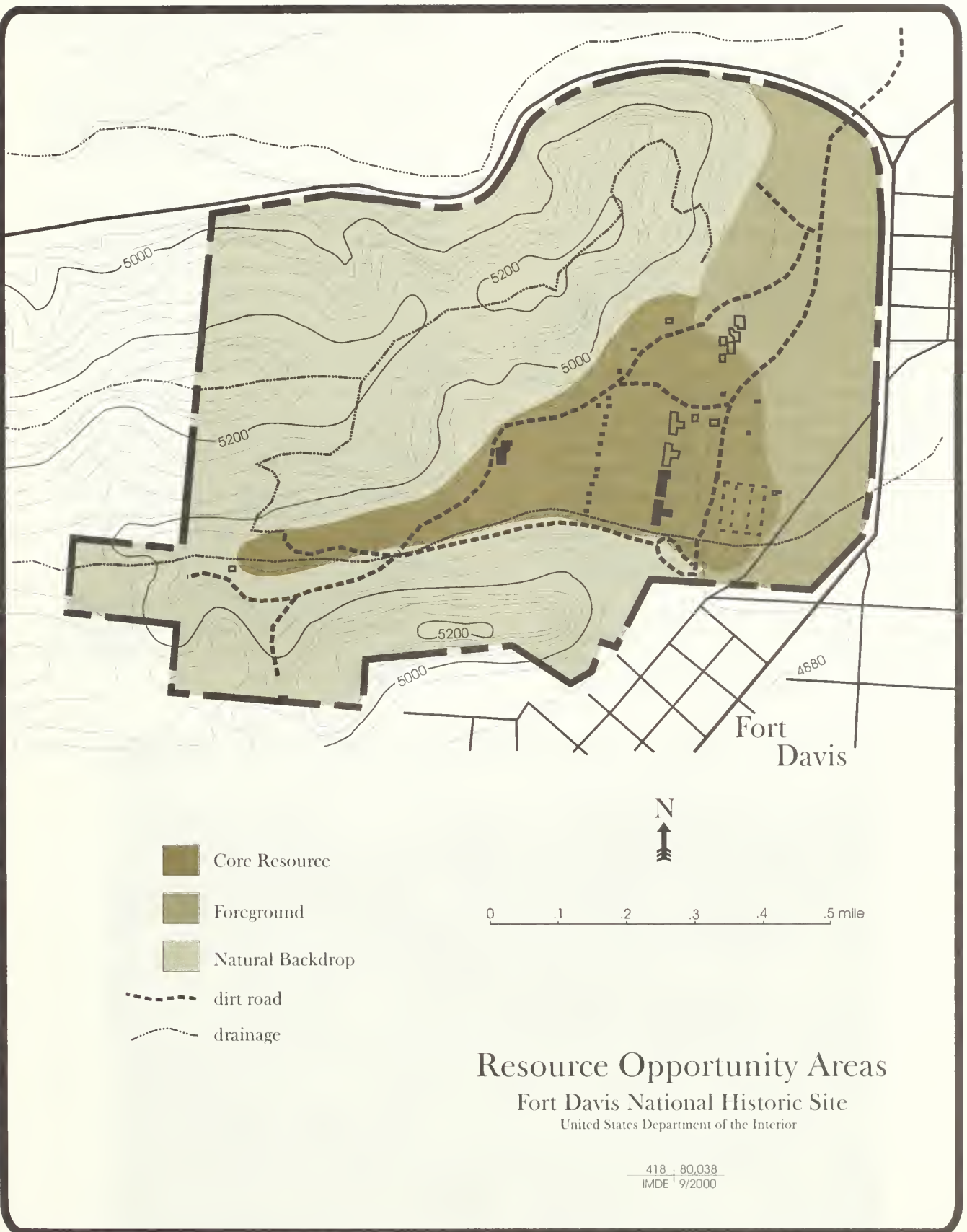
This ROA serves as the entrance to the fort, giving visitors their first impression of the fort and its resources. Resources of special significance that occur within the Foreground ROA include:

- Viewing opportunities—give visitors an outside look at the historic resources and the historic scene. Views from this area provide a picture of how the fort might have first appeared to early settlers.
- Recreational opportunities—provide visitors opportunities to picnic and enjoy the solace of the historic cottonwoods.
- Cultural opportunities—provide resources that supported and maintained the fort's existence.

It is in this ROA that most development has occurred. Support facilities are housed within the fort's historic structures and include a visitor center, museum, auditorium, curatorial storage areas, and administrative offices.

This ROA contains the historic district and most of the fort's historic buildings, ruins, and foundations. Resources of special significance that exist within the Historic Core ROA include:

- Viewing opportunities—give visitors opportunities to see, hear, and learn about the park's prime resource. Firsthand and close-up views of historic resources and the historic scene (parade ground, buildings, foundations, and ruins) are available.



- Interpretive opportunities—are provided through personal service programs. Educational materials, audiovisual media programs, exhibits, and other materials are available in the visitor center, museum, and auditorium.
- Cultural opportunities—areas in this zone contain the prime resource.

Natural Backdrop ROA

This ROA contains the scenic natural background of the fort and can be viewed from the Foreground ROA and from within the Historic Core ROA. It includes the two cliff walls of Hospital Canyon and a rugged steep escarpment running north and south that form the prominent viewscape as seen from lower elevations. Grassland and brush skirt the base of volcanic rock formations. From trails on these ridges, visitors are provided with bird's-eye views of the fort as well as panoramic vistas of the adjacent slopes of the Davis Mountains and flatland areas to the east.

Mixed vegetative cover is found throughout this zone. Areas of sagebrush are intermixed with large clusters of mountain scrub, while

other areas are dominated by desert cacti and pinyon juniper woodland. The seasons are highlighted by the color changes that occur throughout this zone, especially during spring and autumn, providing visitors opportunities to see the breathtaking beauty characteristic of the Davis Mountains.

This ROA also contains the bulk of the hiking and natural viewing opportunities. Trails to lookout points traverse the northwest canyon rim. This area is most important to the fort's natural setting, ensuring that the fort maintains its late 19th-century appearance, and, therefore, this ROA is the most sensitive to development.

Resources of special significance that occur within the Natural Backdrop ROA include:

- Wildlife viewing opportunities—rich in a variety of species, including whitetail and mule deer, squirrel, porcupine, bobcat, ringtail, raccoon, fox, mountain lion, and a variety of birds and reptiles.
- Recreational opportunities—physically demanding trails on the North Ridge provide significant panoramic views and opportunities to explore.



- Cultural opportunities—areas of interest include historic resources such as the cemetery and water storage site.
- Rural Texas landscape and Davis Mountains—the area is a reminder of the natural and primitive nature that at one time composed much of the West.

MANAGEMENT PRESCRIPTIONS

Management prescriptions, common to all alternatives, provide direction for managing specific areas of land within the park. Four management prescriptions have been identified for Fort Davis NHS—Semi-Primitive, Historic Rural, Historic Developed, and Outlying Historic. These prescriptions detail desired visitor experience and resource conditions within a broad framework for the human use of the site. The following six categories—visitor experience, access, natural resource management, cultural resource management, facilities, and maintenance—have been identified as management prescription areas for Fort Davis.

Semi-Primitive

Management provides a semi-primitive experience. Challenge and adventure for visitors are moderate and are in an atmosphere relatively free of human influence and alteration. Natural processes and conditions are perpetuated. The setting is composed of a natural landscape with minor modified features. Encounters with other people may be infrequent, and there are no facilities present unless essential to protect resources or provide for visitor safety and well-being. There is no motorized access.

Visitor Experience—This area provides varied opportunities to experience the semi-primitive conditions with some opportunities for solitude. It is reserved for hiking and nature observation. Off-site interpretation and education are stressed.

Generally visitors are isolated from human sights and sounds. Visitors can experience a feeling of closeness with nature, and there is opportunity to experience solitude, tranquillity, and quiet. A moderate degree of challenge, self-reliance, and some risk is prevalent for visitors to this area, and



knowledge and use of outdoor survival skills are recommended. This type of experience can be provided because the park adjoins the Davis Mountains State Park, which displays similar characteristics.

Evidence of recreational use is generally not readily apparent except along trails and access routes. Resource manipulation is kept to a minimum, but some resource management actions might be required to reduce the impacts of visitor use. A limited number of interpretive exhibits or signs might be needed to meet objectives of protecting the resource. Rules and regulations are explained to visitors before they enter the area.

Management helps to ensure an experience in an untrammelled environment. Evidence of other visitors is also small, and there is a sense of being in a natural landscape, without comforts and conveniences. Visitors who enter this area commit to a moderate level of time and energy.

Access—Access is moderately challenging. Discovery and adventure are the order of the day, with distant views of historic resources. Because there are no roads, public access is by foot, and visitors are required to stay on designated trails.

Natural Resource Management—The natural environment, which includes the cultural landscape, is preserved to the maximum extent possible while accommodating low-density use. Naturally occurring species are maintained or reestablished, and populations of sensitive species are protected and augmented. The introduction of nonnative species is prevented to the extent possible, and attempts are made to eliminate introduced species before they become established. The NPS maintains close control over resource-damaging activities.

Monitoring is carried out regularly, and mitigating measures (revegetation, species augmentation, and reintroduction of extirpated species) are done as needed. Uses are controlled or dispersed if necessary to

protect resources. Visitor use might be restricted if resources or solitude are threatened.

Cultural Resource Management—The park illustrates interpretive themes consistent with its listing in the National Register of Historic Places. A cultural resource management plan guides specific management decisions and addresses the treatment of individual sites. Archeological sites would be protected. Coordination and consultation with the Texas Historical Commission is a part of the process.

Facilities—No developments are allowed other than those associated with trails and visitor safety, and there are only minimum modifications to the natural environment. Signs that blend well with the environment and semi-primitive trails might be present. Additional facilities can be provided only if they are essential to protect resources.

Maintenance—Maintenance activities serve to protect resources and restore areas disturbed by human activities. Trails are maintained to an unpaved NPS standard. Power tools may be used, provided they do not conflict with park values.

Historic Rural

A sense of remoteness is present. Management provides for vehicle access along one paved road. Although the area is predominantly natural, sights and sounds of human activity are occasionally encountered. The types of visitor activities include, but are not limited to, picnic opportunities, wayside interpretive exhibits, interpretation along pathways, and access to hiking trails and ruins. Opportunities for more solitude than experienced in the historic developed areas could be expected, except during peak visitor periods. Human interaction and contacts with NPS staff and volunteers could be moderately frequent during these times and infrequent during the off-season. Visitor challenge would be low because of the presence of roads and motorized vehicles. A moderate amount of resource manipulation would be required to

mitigate impacts associated with moderate human use levels. The integrity of natural and cultural resources, including the cultural landscape, would be preserved, however, some human intervention and alteration would be evident along roads and pathways, at trailheads, and in the picnic area. Support facilities such as picnic tables and portable vault toilets (during special events) may be provided.

Visitor Experience—This area provides the visitors' first glimpses of the fort. There would be a sense of remoteness, but not of isolation and seclusion from human activity. Visitors would be able to reach undeveloped areas of the park from the main paved road via trailheads. For those who are unable to access the more semi-primitive areas of the park, this area would provide an alternative and allow a rural experience without the degree of difficulty found in more primitive areas of the park.

A limited amount of interpretation and education is provided. It is designed to supplement the low-profile signs and interpretive exhibit panels placed in selected locations to provide information, offer limited interpretation of park themes, ensure protection of park resources, and provide for visitor safety.

Access—Access is easy. Only one paved road is provided, and all access originates from this road. Trails for hiking could originate from this area. Short interpretive trails could allow visitors to discover areas of special interest. Access for physically challenged visitors could be provided in selected areas to provide an opportunity for these visitors to experience representative park settings.

Natural Resource Management—The natural environment, which includes the cultural landscape, is preserved to the extent possible while accommodating moderate visitor use levels. Any apparent effects of visitor use would be mitigated, and disturbed areas that caused significant visual impairment would be rehabilitated. The

cumulative effects associated with unacceptable levels of visitor use in the cottonwood picnic grove or in other areas of visitor concentration could be mitigated or prevented by limiting visitor use.

Cultural Resource Management—The park illustrates interpretive themes consistent with its listing in the National Register of Historic Places. A cultural resource management plan guides specific management decisions and addresses the treatment of individual sites. Archeological sites would be protected. Coordination and consultation with the Texas Historical Commission is a part of the process.

Facilities—Only limited development would be provided and few major structures or facilities would be present. A paved road, paved parking, a picnic area, interpretive exhibits and information signs, and trailheads are examples of appropriate facilities for this prescription area.

Maintenance—Activities could include maintaining roads and facilities (cleaning, painting, repairing, etc.), providing for visitor convenience and comfort, protecting resources, and restoring areas disturbed by human activity.

Historic Developed

This management prescription includes all major park development within the existing historic fabric and structures required to serve visitors and meet the needs of management. It encompasses areas where park development and/or intensive use substantially alter the natural environment or the setting of historically significant resources. This area provides an experience that is facility dependent (e.g., visitor center/admin. building), consistent with the historic fabric of the park. The sights and sounds of vehicles and people prevail, as does the experience that is tied to traffic along the major road corridor of the park. Sights and sounds of the historic military fort also heighten visitor awareness of park values.

This area would accommodate the highest levels of use in the park. Visitor activities would be fairly structured and directed and would involve little challenge. Support services and facilities could be moderate. Visitor contacts and contacts with NPS personnel could be frequent in this area, especially during peak visitor periods. Contacts could be less frequent during the off-peak season but might still be common compared with other management areas. There could be little or no opportunity for solitude.

Relatively intensive resource management activity could be required to mitigate impacts associated with high levels of visitor use and development. Although natural processes would be perpetuated wherever possible, a high degree of encroachment and human intrusion to the natural and cultural environment could be evident.

Visitor Experience—This area provides for the primary experience of most visitors, introducing them to many of the park's significant resources. The area also presents the park's primary interpretive themes. Management emphasizes sights and sounds of the military history associated with park resources.

Living history involves visitors in active learning experiences, teaching them about the history of the fort. Exhibits emphasize the role of the military during the frontier Indian Wars period.

Films and publications available at the visitor center/auditorium area convey an understanding of the park and its natural and cultural resources. Tours by NPS personnel could be available. Additional orientation information would assist visitors in planning their stay in the park or region.



Access—Access would be easy. Pedestrian access along improved trails could allow for visitor access to a variety of environments. Hardened trails could be provided in areas around the visitor center and in other areas of high use identified to give visitors an overview and familiarity with park resources. Barrier-free design is provided in selected areas to permit visitors with physical impairments to experience representative park settings.

Natural Resource Management—The natural environment, which includes the cultural landscape, is preserved to the greatest extent possible, while accommodating high levels of use and protection of the sensitive historic fabric.

Vista site modifications may be used to improve views in this area. Visitors would be confined or directed to trails to limit resource impacts. Significant soil and vegetation impacts occurring near high-use sites could be mitigated through periodic closures, the use of natural materials to more clearly define use corridors, and increased enforcement techniques. Native and historically significant species would be used for revegetation. Landscaping would be done with native species or those species documented to have been present during the active fort period. Mowing and selective removal/pruning of

trees may also be done where appropriate or to enhance visitor safety, consistent with the park's historic scene.

Cultural Resource Management—

Resources or sites that are designated as outstanding cultural features might be restored in accordance with NPS Standards. Resources or sites designated as significant cultural features and cultural landscapes will be preserved or restored depending on the degree of importance to the visitor's understanding of the purpose of the park or settlement and use of the region. Archeological sites would be protected. Coordination and consultation with the Texas Historical Commission is a part of the process.

Facilities—Developments must be compatible and consistent with the historic resource. Existing and potential modifications might include unsurfaced access road, restored dikes and ditches, and other treatments that would enhance the historic scene.

Maintenance—Maintenance activities could involve maintaining existing facilities (cleaning, painting, crack sealing, chip sealing, striping, etc.), landscaping, providing for visitor convenience and comfort, protecting resources, irrigating, and restoring areas disturbed by human activities. Roads, buildings, signs, walks, interpretive displays, landscaping, and other facilities would be maintained on a regular basis. Power tools could be used for routine maintenance activities, and heavy equipment could be used for road and utility system repairs, development, and maintenance.

Outlying Historic

This management prescription includes ruins and foundations of first and second fort structures that are not within the historic core areas. Management accommodates visitors wishing to experience the park's superlative cultural resources on foot. Contacts among visitors and with NPS personnel are less frequent than those in the historic developed or historic rural prescriptions. Contacts are

less frequent during midweek and off-season periods, when opportunities for solitude and seclusion would be greater.

The landscape setting appears predominantly natural, although evidence of facilities that blend with surroundings might be present. Encounters with other people are occasional, and there is considerable evidence of human use. Other than the main road through the area, there is no motorized access.

Physical challenges are low for visitors. Moderate to extensive resource management activity is required to mitigate impacts associated with visitor-use levels. Naturalness is emphasized, as is the contemplative nature of visitor experience, but some human alterations and intrusions may be evident.

Visitor Experience—This area brings the visitor in direct contact with the park's cultural resources. The integrity of natural and cultural resources, including the cultural landscape, would be preserved while providing interpretation and trail access for a small number of visitors. This area provides a sense of being immersed in the natural and cultural landscape, creating a sense of oneness with the historical past. The only facilities present are the ruins and foundations of the first and second forts. Some interpretation and information are provided by wayside exhibits, signs, and park staff.

Access—Access can vary from easy to moderately challenging. This area has one main road through it. Public access is restricted to established trails and limited to foot traffic. No bicycles or motorized vehicles are permitted.

Natural Resource Management—The natural environment, which includes the cultural landscape, is preserved. The area is monitored to avoid overuse. Trail use and other intrusive visitor impacts are actively mitigated.



Emphasis is placed on minimizing human impacts on sensitive environments, cultural resources, habitats, and species. Management would reduce or minimize the impacts of all uses. If impairment occurred, mitigating actions, such as temporary closures, revegetation, or restrictions on uses, would be implemented as required.

Cultural Resource Management—

Resources or sites that are designated as outstanding cultural features are stabilized to protect the integrity of the resource. Other resources designated as significant cultural features or landscapes could be stabilized depending on the degree of importance to the visitor's understanding of the purpose of the park or settlement and use of the region. Archeological sites would be protected.

Coordination and consultation with the Texas Historical Commission is a part of the process.

Facilities—Only limited development is provided—major facilities are not allowed.

Maintenance—Activities include protecting cultural resources from excessive visitor use, maintaining/stabilizing cultural sites, and providing resource protection. Closure of the area to visitors could occur as well as the restoration of areas disturbed by human activity. Facilities to provide for the convenience of visitors and their safety would be maintained to lesser standards than those found in the Historic Developed area of the park.

ALTERNATIVES

This document presents four alternatives for the management of Fort Davis NHS, including the NPS proposal. Alternatives are broad and conceptual in nature. Each alternative provides for a distinctly different method of achieving the Desired Future Conditions outlined under the Purpose and Need for the Plan. In each of the four alternatives, the following categories or topics are addressed: General Emphasis, Outreach and Partnership, Cultural Resource Management, Land Use Management, Interpretation, Natural Resource Management, Possible Future Facility and Development Changes, Costs, and Future Plans and Studies.

A “no action” alternative and three action alternatives, including the National Park Service proposal, are presented in this chapter. The final plan, when adopted, will serve as the park’s general management plan. The plan will guide the management and development of Fort Davis for the next 10 to 15 years.

Alternative A—No Action

This alternative describes the no-action alternative, what would happen if existing management were to continue.

General Emphasis

Under the no-action alternative, existing administrative, maintenance, land use, and resource management activities would continue. Minimal changes, subject to available funding, would be implemented to bring unsatisfactory conditions into compliance with current regulations and policies. Present use patterns would serve as the basis for mapping management prescriptions. Existing levels of resource protection and interpretation would continue. Restoration of historic fabric would be done piecemeal on a most critical need basis. Loss of original ruins and

portions of structures could be expected. Progress on maintaining or raising the condition of structures to a good condition would be unlikely.

Interpretive programs would continue to focus on the history of the fort, primarily from a military perspective. The current informational video, which highlights the role played by Fort Davis during the frontier Indian Wars of the late 19th century, the current bugle call tape, and sounds of a dress retreat parade would continue to be enjoyed by visitors. Interpretive messages, including information on resource protection, would continue to be provided to all visitors.

Existing visitor facilities would be maintained to support current activities, and no new facilities would be considered or built. Required improvements to safety, sanitation, and access for persons with disabilities would be completed as funding permitted.

The historic sense of quiet, interrupted by only the sounds of historic bugle calls and a dress retreat program, would be maintained based on current management practices. The park would continue to encourage adjacent landowners to use their land in ways that complement park values. Mutually beneficial partnerships, with both the private and public sectors, would continue to be fostered.

Outreach and Partnerships

In keeping with advances in technology, a web site would be established that provides basic information about the park. It would be updated on an as-needed basis and would contain information on upcoming events and programs. Current partnerships with the Friends of Fort Davis National Historic Site and other local and area organizations, whose focus is resource protection, would continue to be encouraged. The existing research/library facility would be maintained and would continue to be accessible to the general

public. New publications and documents would be added, but without expansion or change to the facility.

Cultural Resource Management

Curatorial—The park's museum collection encompasses archeological and historic artifacts, furnishings, photographs, herbarium specimens, and various 19th- and 20th-century fort records. The conditions necessary to preserve and protect these museum objects are identified in the National Park Service Checklist for Preservation and Protection of Museum Collections. The park would continue to maintain the collection in the current condition, and would be able to address deficiencies only as resources became available. Some deficiencies, therefore, would continue to exist.

Existing levels of curatorial endeavors would continue. The park would continue to catalog and enter into the National Park Service Automated National Catalog System approximately 250 items per year. The park would continue to explore new opportunities for partnerships and funding to ensure current levels of preservation, protection, and other curatorial work. Exhibits would be maintained in their current conditions. Temporary exhibits would be changed periodically, and items in permanent exhibits rotated at regular intervals in order to help protect and preserve them.

Archeology—Archeological sites would be preserved and protected, using existing monitoring and conservation methods. Information gathered from analyzing, evaluating, and identifying artifacts from the sites would continue to be shared with the public.

Historic Fabric—Much of the historic fabric of Fort Davis National Historic Site consists of adobe and stone buildings, ruins, and foundations. Current preservation techniques and practices would continue to be used in the conservation of these

remains. Loss of some original fabric could be anticipated. The national database lists 110 structures in Fort Davis National Historic Site on the List of Classified Structures. According to park records, many more structures exist. The inconsistencies between the park's data and the national database would continue to exist and, therefore, the national database would continue to be incomplete. Historic structures and ruins would be monitored periodically, and their conditions would be noted.

Foreground ROA—A unique stand of historic cottonwood trees, dating from the mid- to late 19th century, is adjacent to the paved roadway that leads from the entrance gate to the parking area. There is a picnic area in this historic grove. Current natural resource management policies would be maintained, thus emphasizing the perpetuation of the grove.

Historic Core ROA—The eastern boundary of Fort Davis National Historic Site is State Highway 17. In recent years, truck traffic has increased on this route, but still a relatively quiet setting prevails on the fort grounds. This natural quiet serves as a backdrop for the daily presentation of historic bugle calls and the sounds of a dress retreat parade. Park staff will continue to maintain this setting within the park. No alterations will be made to change either the recordings or the amplifying equipment used to project these sounds.

The present parking area, which contains spaces for cars, buses, motor homes, and two spaces for visitors with disabilities, will not be modified or changed.

Backdrop ROA—For the most part, the appearance and environment of the natural backdrop of Fort Davis National Historic Site is rugged, with cliff walls featuring steep slopes that form prominent landmarks. This is the area that offers the majority of hiking and nature viewing opportunities. The natural landscape of this backdrop is

important to the fort's historic setting, and it also helps visitors visualize its 19th-century appearance. The natural and cultural environment of this area would be maintained.

Land Use Management

This alternative would provide no change in existing uses. Use would continue to be managed for the protection of resources and the historic fabric. No long-term land allocation plan using management prescriptions for uses on park land would be implemented.

Interpretation

The story of Fort Davis would continue to be presented primarily from the viewpoint of the military. Programs would emphasize the role the soldiers played in bringing an end to the frontier Indian Wars and their contributions to the peaceful development and settlement of the area. Training would be provided based on available funding in order that employees in the interpretive division would have the opportunity to achieve essential or basic level competencies identified in their career field. Educational programs and services would continue to focus on curriculum for grades 4 through 7. A resource protection message would continue to be included in all orientation talks and interpretive programs. Research into 19th-century military and civilian records would continue, to ensure the accuracy and quality of interpretive programs, interpretive literature, and interpretive exhibits.

Because park interpreters often dress in the military and civilian clothing of the late 19th century when presenting programs and interpreting furnished historic buildings, the living history clothing and equipment used



would be sustained at the current levels of maintenance.

The park has had an active Volunteer-In-Parks program since 1972. Volunteers work in all areas of park operation and provide invaluable services and expertise to the park. The park would make every effort to maintain the current cadre of volunteers and to recruit new volunteers for the program.

Natural Resource Management

In order to ensure protection of the resources as well as the safety of the visitors, routine patrols of the grounds and structures are conducted. The current level of these patrols would be maintained.

Only one of the park's historic structures is equipped with a sprinkler system for fire suppression. This is an enlisted men's barracks that was modified to house the administrative offices, visitor center, museum, auditorium, curator's office, and museum collection storage area. Under this alternative, no other historic structures would be outfitted with fire suppression systems.

The town of Fort Davis supplies water for fire hydrants. The park's water lines are in

fair condition, but are not large enough in diameter to provide necessary water volume for fire protection of the historic buildings. In addition to the town water supply, a potential source of water for fire suppression exists in the park. The park has one 50,000-gallon water storage tank, which holds water from two water wells. Water from these wells is currently not used for fire suppression because of low water pressure. This inadequate water system/supply to meet the protection needs of the park would remain status quo.

The park does not have a fire truck serviceable to fight structural fires, and not all employees who have been red-carded have had proper fire suppression training. These conditions would remain the same under the no-action alternative.

The fort's historic buildings that have been modified for electricity do not have electrical systems that meet National Electrical Code (NEC) standards. The electrical systems would not be upgraded to meet national code standards.

Wetlands—Fort Davis has a narrow ephemeral stream corridor known as the "south channel" that meets NPS criteria for a wetland. Two other drainages constructed by the army as interceptor dikes and ditches function as wetlands when moderate to major flooding occurs at the fort. Because of long-term changes to the stream, berm, and ditch system at the fort by erosion, flooding, and concern about changing the historic fabric, all of the wetland areas would continue to be disrupted during moderate to major flooding events under this alternative.

Floodplain/Flash Flood—Since the establishment of Fort Davis in 1854, military personnel and now park managers have been plagued by periodic flash flooding of the site. Intense thunderstorms, which are characteristic of the region during summer "monsoon" periods, often produce high volumes of runoff water. Given the small

size of the watershed and the fort's position on an alluvial fan, some flooding may occur during summer months when rainfall is average or above average.

During the second fort period (1867–1891), the army constructed a series of dikes and ditches to alleviate flooding of the fort. These protective structures are still in use, but because of limited design effectiveness (less than 100-year flood protection), erosion, human disturbances, and extensive maintenance requirements, these safeguards are not adequate to protect the area. Under this alternative, these insufficient structures would not be upgraded to protect park resources from flash flooding. Since the South Channel can only carry the 25–50 year flood flow, all greater storm events would cause some flooding damage to historic structures close to the channel.

Noise and Overflights—Increases in the motor vehicle noise in the parking area can be attributed to an increase in the number of motor homes and buses, many of which do not turn off their engines after parking. The parking area would be periodically monitored in order to reduce noise levels.

In order to add to the visitor's appreciation and understanding of the fort, a sound system projecting military recordings is used. These historic sounds, in turn, help to cover up modern sounds from the parking area and the adjacent highway. These recordings would continue to be used.

The park would continue to maintain the high-quality visitor experience and ensure the protection of resources from detrimental effects caused by overflights. This condition does not exist at the present time. Should a situation arise in the future, appropriate studies would be undertaken and a recommendation proposed.

Air Quality—The air quality of the park is good, even though on some days, particularly those when air currents are from the southeast, the site experiences visibility

impairments. Recent air quality studies of the entire Trans-Pecos and Big Bend region, however, did not identify any one source of contamination. Fort Davis National Historic Site would continue to support air quality programs, both in the public and private sectors.

Possible Future Facility and Development Changes

There would be no changes to facilities. The no-action alternative would retain current uses of park resources and the status quo on development and organization. Facilities would be improved to meet standards as funding permits. No construction or restoration work would be undertaken. Existing facilities and structures would continue to serve their present functions. Only routine maintenance would be carried out.

Operational Costs

Current Budget and Staff—The FY2000 budget for Fort Davis National Historic Site is \$942,000 as compared with \$774,000 in FY1999. In addition to the standard increase for inflation, the FY2000 budget reflects an increase of \$110,000 for a new cultural resource management position and for three seasonal resource preservation worker positions. All employees share visitor service, protection, and conservation functions. These functions are as follows:

- **Superintendent.** Responsible for the general management and oversight of the park, including establishing long-term mission goals and objectives, setting and ensuring appropriate policy and procedure, and serving as the liaison with other agencies, government officials, and other entities and organizations.
- **Facility Management.** Responsible for design, construction, maintenance, and general oversight of all area facilities, including nature trails, picnic area, public rest rooms, interpretive facilities, roads and trails, historic and nonhistoric buildings, and utilities.

- **Interpretation and Visitor Services.** Responsible for the operation of the visitor center, interpretive waysides and exhibits, audio and audiovisual presentations, five furnished structures, publications, environmental and curriculum-based education and outreach, and interpretive programs and demonstrations. Responsibilities for providing law enforcement (with an emphasis on protecting park resources and visitors), search and rescue, fire suppression, fee collection, monitoring and research of natural resources, including wildlife, flora, and air and water quality, are also provided for under this grouping.
- **Cultural Resource Management.** Provides monitoring and research of cultural resources, including archeological and historical resources. Responsible for the accountability, preservation, and protection of the museum collection.
- **Historian.** Responsible for planning and conducting historic research and, in conjunction with resource management, monitoring cultural resources.
- **Administration.** Provides essential support in personnel services, payroll, property, contracting, purchasing, and budget.

Current staffing levels include 17 permanent (P) and 6 seasonal (S) full-time equivalencies (FTEs), for a total of 23—Interpretation and Visitor Services (4 P, 1 S), Facility Management (6 P, 3.5 S), Cultural Resource Management (3 P, 1 S), Historian (1 P), Administration (2 P, .5 S), and Superintendent (1 P).

Development Costs

There are no development costs for the no-action alternative.

Future Plans and Studies

There would be no change to currently scheduled plans and studies.

Alternative B

General Emphasis

Under this alternative the fort's historic setting and historic viewscape would be protected and preserved and modern intrusions would be minimized in the historic core area. This would help to provide the historic sense of quiet that adds to the visitor's enjoyment and appreciation of the park. Existing levels of resource protection and interpretation would continue. Historic fabric would be restored on a piecemeal basis, contingent on the availability of funding. Loss of original ruins and portions of structures could result. Progress on maintaining or raising the condition of structures to good would be minimal.

Interpretive programs would continue to focus on the history of the fort, primarily from a military perspective. The current informational video, which highlights the role played by Fort Davis during the frontier Indian Wars of the late 19th century, the current bugle call tape, and sounds of a dress retreat program would continue to be enjoyed by visitors. Interpretive messages, including information on resource protection, would continue to be provided to all visitors. New programs would be limited to the minimum necessary to meet interpretive, research, and educational needs.

Existing visitor facilities would be maintained to support current activities, and no new facilities would be considered or built. Required improvements to safety, sanitation, and access for persons with disabilities would be completed as funding permits. The park would continue to encourage adjacent landowners to use their land in ways that complement park values. Mutually beneficial partnerships, with both



the private and public sectors, would continue to be fostered and improved.

Outreach and Partnerships

In keeping with advances in technology, a web site would be established that provides basic and educational information about the park. Included would be a web page containing basic information on the Buffalo Soldiers as well as links to other authoritative sources on the Internet containing information on these soldiers of African-American descent who served in the late 19th-century army.

Basic education programs emphasizing the general history of the fort would be available. Current partnerships with the Friends of Fort Davis National Historic Site and other local and area organizations, whose focus is resource protection, would continue to be encouraged. The existing research/library facility would be maintained and would continue to be accessible to the general public. New publications and documents would be added, but without expansion or change to the facility.

Cultural Resource Management

Curatorial—The park's museum collection encompasses archeological and historic

artifacts, furnishings, photographs, herbarium specimens, and various 19th- and 20th-century fort records. The conditions necessary to preserve and protect these museum objects are identified in the National Park Service Checklist for Preservation and Protection of Museum Collections. The park would continue to maintain the collection in current conditions and would actively seek to correct some of the standards considered to be deficient.

Existing levels of curatorial endeavors would continue. The park would continue to catalog and enter into the National Park Service Automated National Catalog System approximately 250 items per year. The park would continue to explore new opportunities for partnerships and funding to ensure current levels of preservation, protection, and other curatorial work.

Exhibits would be maintained in their current conditions. Temporary exhibits would be changed periodically and items in permanent exhibits rotated at regular intervals in order to help protect and preserve them.

Archeology—Archeological sites would be preserved and protected using existing monitoring and conservation methods. Information gathered from analyzing, evaluating, and identifying artifacts from the sites would continue to be shared with the public. A limited internship program would be developed to assist with the recording of data and evaluation of the sites.

Historic Fabric—Much of the historic fabric of Fort Davis National Historic Site consists of adobe and stone buildings, ruins, and foundations. Current preservation techniques and practices would continue to be used in the conservation of these remains. Loss of some original fabric could be anticipated. The national database lists 110 Fort Davis National Historic Site structures on the List of Classified Structures. According to park records there are many more. The inconsistency between the park

records and the national listing would be resolved. The database would be completed, providing information on all known structures, ruins, and sites. The information would be updated continually and monitoring would be provided through analysis of the data.

Foreground ROA—A unique stand of historic cottonwood trees, dating from the mid- to late 19th century, is adjacent to the paved roadway that leads from the entrance gate to the parking area. There is a picnic area in this historic grove. Current natural resource management policies would be maintained, thus emphasizing the perpetuation of the grove.

Under this alternative, a cultural landscape plan (CLP) for Fort Davis National Historic Site would be developed and recommendations would be implemented as appropriate.

Historic Core ROA—The eastern boundary of Fort Davis National Historic Site is State Highway 17. In recent years, truck traffic has increased on this route, but still a relatively quiet setting prevails on the fort grounds. This natural quiet serves as a backdrop for the daily presentation of historic bugle calls and the sounds of a dress retreat parade. Park staff would continue efforts to maintain this setting in the park. No alterations will be made to change either the recordings or the amplifying equipment used to project these sounds.

Recommendations proposed in the Cultural Landscape Report (CLR) for Fort Davis National Historic Site would be implemented as appropriate.

The present parking area contains spaces for cars, buses, motor homes, and two spaces for visitors with disabilities. Under this alternative, the parking area would not be enlarged, but would be modified to allow for the accommodation of more vehicles.

Backdrop ROA—For the most part, the appearance and environment of the natural

backdrop of Fort Davis National Historic Site is rugged, with cliff walls featuring steep slopes that form prominent landmarks. This is the area that offers the majority of hiking and nature viewing opportunities. The natural landscape of the backdrop is important to the fort's history, and it also helps visitors to visualize its 19th-century appearance. The natural and cultural environment of this area would be maintained. Recommendations proposed in the CLR would be implemented as appropriate.

Land Use Management

This alternative would provide for upgrading and improving present facilities, such as modifying the parking area to increase capacity. Management prescriptions (MP) describe how the park would be managed. These can be broken down as follows:

- About 31.7 acres (6.7%)—Historic Developed MP
- About 97.1 acres (20.5%)—Historic Rural MP
- About 68.4 acres (14.4%)—Outlying Historic MP
- About 276.7 acres (58.4%)—Semi-Primitive MP

Interpretation

The story of Fort Davis would be presented from different viewpoints so as to include the various cultural groups associated with its history. The main focus would continue to be from the military perspective, but interpretive programs, literature, and exhibits would additionally include the story from the perspectives of American Indians and civilians.

Educational programs and services would continue to focus on enriching curriculum for grades 4 through 7. Orientation talks and interpretive programs would include a resource protection message and information about natural resources. Research into 19th-century military and civilian records would continue to ensure

the accuracy and quality of interpretive programs, interpretive literature, and interpretive exhibits.

Because park interpreters often dress in the military and civilian clothing of the late 19th century when presenting programs and keeping open and interpreting furnished historic buildings, the living history clothing and equipment used would be sustained at the current levels of maintenance.

The park has had an active Volunteer-In-Parks program since 1972. Volunteers work in all areas of park operation and provide invaluable services and expertise to the park. The park would make every effort to retain the current cadre of volunteers and to recruit new volunteers for the program.

Natural Resource Management

In order to ensure protection of the resources as well as visitor safety, routine patrols of the grounds and structures are conducted. The current level of these patrols would be maintained. Restored historic structures in which historic artifacts or historic furnishings are located, or in which park functions are conducted, will be installed with sprinkler systems for fire suppression.

In order to provide necessary water volume for the fire protection of historic buildings, the park's water systems would be upgraded. This would involve upgrading water lines that supply water from the town of Fort Davis. It also would involve making operational the park's own water system. Approved fire suppression equipment, including a fire truck serviceable to fight structural fires, would be acquired, and training for employees would be increased to meet fire suppression needs.

The fort's historic buildings that have been modified for electricity do not have electrical systems that meet National Electrical Code (NEC) standards. Under this alternative, the electrical systems in all buildings would be upgraded to meet NEC standards.

Wetlands—In this alternative, the North Ditch would be optimized for water conveyance and flood protection (effective for less than the 100-year flood). Wetlands along the ephemeral South Channel dike system would continue to be disrupted during periodic moderate to heavy flooding events. Periodic maintenance of the North Ditch after flooding events would cause some short-term wetland and vegetation disturbance.

Floodplain/Flash Flood—Since the establishment of Fort Davis in 1854, military personnel and now park managers have been plagued by periodic flash flooding of the site. Intense thunderstorms, which are characteristic of the region, often produce high volumes of runoff water. Given the small size of the watershed and the fort's position on an alluvial fan, some flooding may occur during summer months when rainfall is average or above average.

During the second fort period (1867–1891), the army constructed a series of dikes and ditches to alleviate flooding of the fort. These protective structures are still in use, but because of limited design effectiveness (less than 100-year flood protection), erosion, human disturbances, and extensive maintenance requirements, these safeguards are not adequate to protect the area. The Water Resources Division of the National Park Service has identified options for improving the management of floodwaters in and around Fort Davis National Historic Site. One of these options involves the modification of the North Ditch to maximize its conveyance of water. This would reduce flooding at the south end of the site for flooding events of less than the 100-year flood, thus providing more protection for the historic buildings, foundations, and ruins located in this area. Since the South Channel can only carry the 25–50 year flood flow, all greater storm events would cause some flooding damage to historic structures close to the channel.

Under this alternative, the North Ditch Option would be used to protect park resources. Periodic maintenance of the North Ditch after flooding events would be required to continue the level of protection designed for.

Noise and Overflights—Increases in the amount of motor vehicle noise in the parking area can be attributed to an increase in the number of motor homes and buses, many of which do not turn off their engines after parking. The parking area would be periodically monitored in order to reduce the noise levels.

In order to add to the visitor's appreciation and understanding of the fort, a sound system projecting military recordings is used. These historic sounds, in turn, help to cover up modern sounds from the parking area and the adjacent highway. Improvements would be made to maintain a high-quality sound system for these recordings.

The park would continue to maintain the high-quality visitor experience and ensure the protection of resources from detrimental effects caused by overflights. This condition does not exist at the present time. Should a situation arise in the future, appropriate studies would be undertaken and a recommendation proposed.

Air Quality—The air quality of the park is good, even though on some days, particularly those when the air currents are from the southeast, the site experiences visibility impairments. Recent air quality studies of the entire Trans-Pecos and Big Bend region, however, did not identify any one source of contamination. Fort Davis National Historic Site would continue to support air quality programs both in the private and public sectors.

Possible Future Facility and Development Changes

Facilities would be improved, funds permitting. The following would be some of

the possible facility changes, were this alternative chosen.

- The park's water systems would be upgraded.
- The fire suppression system, which includes sprinkler systems in all buildings, would be upgraded.
- The electrical systems would be upgraded.
- Building standards to meet ADA requirements in the post hospital would be improved.
- Buildings within the existing maintenance area would be upgraded to meet CFR and OSHA standards.
- Staff quarters would be remodeled to increase office space.
- The parking area would be modified to increase capacity within the existing space.

Operational Costs

Current staff and budget would be maintained.

Development Costs

There would be an expenditure of \$697,000. (See Table 2)

Future Plans and Studies

- New Comprehensive Archeological Survey
- Condition Assessments of Archeological Sites
- Cultural Landscape Inventory
- Cultural Landscape Report
- Ethnographic Study
- Comprehensive Interpretive Plan
- Natural Resource Management Plan and Fauna Study
- Cultural Resource Management Plan
- Safety Plan
- Flash Flood Plan (includes Floodplain Map)
- Historic Preservation Plan identifying types and levels of treatment
- Structural Fire Management Plan
- Wildland Fire Management Plan
- Transportation Study: Should visitation reach 125,000 visitors a year, a study would be initiated to evaluate the feasibility of a transportation system from the town of Fort Davis.

Alternative C—NPS Proposal

This alternative describes the National Park Service's proposal.

General Emphasis

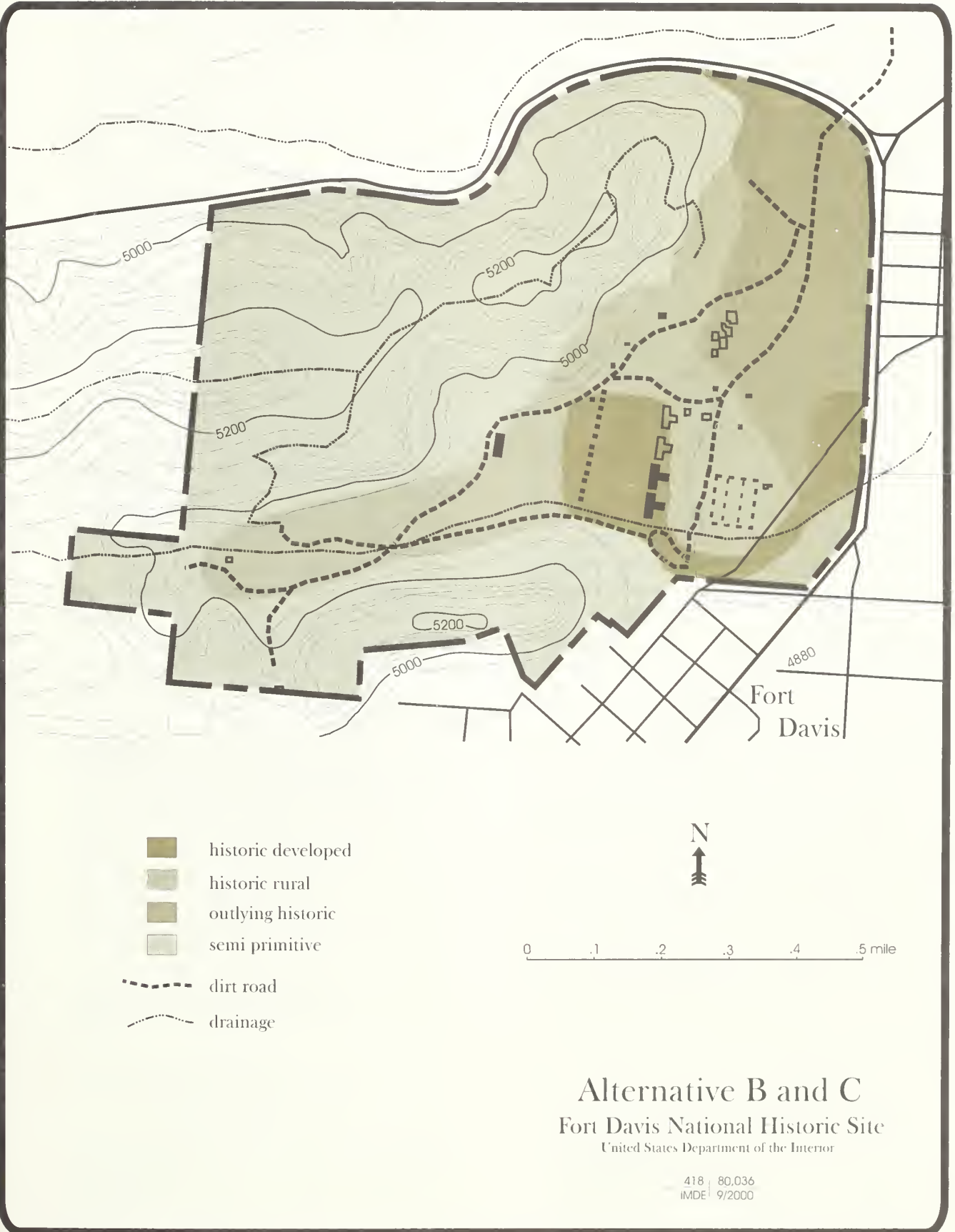
In 1961, the fort was authorized as a National Historic Site because of the extent of unaltered historic foundations, ruins, and structures. In addition, the cultural landscape and viewsheds were considered as being much the same as they were when the army leased the land during the last half of the 19th century. Because of these unique characteristics, resource protection and conservation are foremost in the development of any management objectives for the site.

In this alternative, any change in the fort's outward appearance would be minimal. There would be no further exterior restoration or modern development in the historic core. A well-balanced program of preservation, resource protection, and interpretation would be emphasized. Existing buildings, ruins, and foundations would undergo stabilization and conservation measures so as to preserve their historical integrity. Work would be done using in-kind materials and tested stabilization techniques.

The interior of the post hospital would be partially restored and refurnished to enhance the fort's story. The south wing and the curatorial section of the east wing of HB-20 would be remodeled to maximize office space and to create areas where visitor-activity functions could be conducted.

Phase II of this alternative, dependent on partnerships resulting in private sector funding, would provide for the relocation of the administrative and maintenance functions as well as employee housing and some curatorial storage outside of the park.

Broader interpretive themes highlighting the more complex role of Fort Davis in the



history of the American West would complement existing interpretive programs. These would include, but would not be limited to, programs that would instill a greater cognizance and appreciation of the first and second forts. The current informational video would continue to be enjoyed by visitors, but improvements would be made in the programs featuring the sounds of the dress retreat program and the bugle calls. The fort's history would be enhanced to include the stories of all groups and cultures related to that history. Interpretive programs would not only bring to light the role played by the military but would also emphasize the roles played by American Indians and civilians. The curriculum-based educational programs would be enhanced.

The park would continue to encourage adjacent landowners to use their land in ways that complement park values, thereby promoting the natural and scenic character of the landscape. Mutually beneficial partnerships with educational institutions, private organizations, and individuals would be fostered and improved.

Outreach and Partnerships

A web site would be established that provides curriculum-based educational materials for grades K–12 for on-site and off-site use. In addition, the web site would have updated and detailed park information. It would contain web pages that provide authoritative information on the Buffalo Soldiers who served at Fort Davis. The web site would also provide links to other authoritative sources on the Internet containing information on these soldiers of African-American descent, who served in the late 19th-century army.

Current partnerships with the Friends of Fort Davis National Historic Site and other local and area organizations, whose focus is resource protection, would be expanded. In addition, new partnerships with other preservation organizations and agencies,

including the Texas Parks and Wildlife Department, would be actively developed.

The existing research and library facility would be expanded and upgraded. New publications and documents would continue to be added, but the facility would be made more accessible and more user-friendly for researchers as well as for the general public.

Cultural Resource Management

Curatorial—The park's museum collection encompasses archeological and historic artifacts, furnishings, photographs, herbarium specimens, and various 19th- and 20th-century fort records. The conditions necessary to preserve and protect these museum objects are identified in the National Park Service Checklist for Preservation and Protection of Museum Collections. Under this alternative, all deficiencies would be corrected with appropriate funding. This would involve the acquisition of new cabinets and expanded storage space. It would also provide for improved office space and the installation of environmental controls in buildings that house artifacts.

The park currently catalogues and enters into the National Park Service Automated National Catalog System approximately 250 items per year. Under this alternative, more artifacts would be conserved, catalogued, and preserved through staff increases. Partnerships and funding for a Cooperative Ecosystem Studies Unit (CESUs) and new internships would be actively solicited. Display space for temporary as well as permanent exhibits would be increased and modernized.

Archeology—Archeological sites would be preserved and protected using existing as well as more advanced methods of monitoring and conservation. Information gathered from analyzing, evaluating, and identifying artifacts from the sites would be shared with the public through exhibits and publications. Interns would be actively

sought to assist with the recording of data and evaluation of the sites.

Historic Fabric—Much of the historic fabric of Fort Davis National Historic Site consists of adobe and stone buildings, ruins, and foundations. Current conservation practices would be continued, but in addition, new state-of-the-art preservation techniques could be applied.

The national database lists 110 Fort Davis National Historic Site structures in the List of Classified Structures. According to park records, there are many more. The inconsistency between the park records and the national listing would be resolved. The database would be completed, providing information on all known structures, ruins, and sites. The information would continually be updated, and monitoring would be provided through analysis of this data.

Foreground ROA—The unique stand of historic cottonwood trees, dating from the mid- to late 19th century, is adjacent to the paved roadway that leads from the entrance gate to the parking area. There is a picnic area in this historic grove. Current natural resource management policies would be maintained, thereby emphasizing the perpetuation of the grove. The cultural landscape report (CLR) recommendations would be implemented as appropriate.

With **phase II** implementation, the functions in the maintenance complex, Bally building, and quarters would move to a location outside the park, and the buildings would be removed.

Historic Core ROA—The eastern boundary of Fort Davis National Historic Site is State Highway 17. In recent years, truck traffic has increased on this route, but still a relatively quiet setting prevails on the fort grounds. This natural quiet serves as a backdrop for the daily presentation of historic bugle calls and the sounds of a dress retreat parade. Park staff would continue efforts to maintain this setting in the park. The recordings, however, would be revised to more closely

reflect the military sounds of the 1880s, and the amplifying equipment used to project these sounds would be upgraded.

Recommendations in the Cultural Landscape Report (CLR) for Fort Davis National Historic Site would be implemented as appropriate.

The present parking area contains spaces for cars, buses, motor homes, and two spaces for visitors with disabilities. Under this alternative, the parking area would be redesigned to provide for more vehicles.

Backdrop ROA—For the most part, the appearance and environment of the natural backdrop of Fort Davis National Historic Site is rugged, with cliff walls featuring steep slopes that form prominent landmarks. This is the area that offers the majority of hiking and nature viewing opportunities. The backdrop landscape is significant to the fort's history and also helps to maintain its 19th-century appearance. The natural appearance and environment of this area would be maintained. Recommendation in the CLR would be implemented as appropriate.

Land Use Management

This alternative would provide for a decrease in facilities inside the park to support high-quality recreational experiences and activities. Some facilities would be redesigned, moved, or relocated outside the park boundary. The alternative would be phased in as appropriate partnerships were developed. In addition, the relocation of the maintenance facility, employee housing, and the curatorial Bally building would be dependent upon available funds.

Management prescriptions (MP) describe how the park would be managed. These can be broken down as follows:

- About 31.7 acres (6.7%) (25.5*)—Historic Developed MP
- About 97.1 acres (20.5%) (104.1*)—Historic Rural MP

- About 68.4 acres (14.4%) (74.9*)—Outlying Historic MP
- About 276.7 acres (58.4%) (270.7*)—Semi-Primitive MP

*Upon phase II implementation

Interpretation

The foundation of the interpretive programs would be the story of Fort Davis presented from the viewpoints of the various cultural groups associated with its history. In addition to addressing the complete history of both the first and second forts through the perspective of the military, interpretive programs, literature, and exhibits would include the story from the perspectives of American Indians and civilians.

Staff would be increased and training would be provided so that all interpreters would achieve the full competencies identified in their career field. Curriculum-based educational programs and services would be developed for grades K–12. Orientation talks and interpretive programs would include a resource protection message and information about natural resources.

Research into 19th-century military and civilian records would be ongoing to ensure the accuracy and quality of interpretive programs, interpretive literature, and interpretive exhibits.

Because park interpreters often dress in the military and civilian clothing of the late 19th-century in presenting programs and keeping open and interpreting furnished historic buildings, the living history clothes and equipment would be upgraded and adequate storage provided.

The park has had an active Volunteer-In-Parks program since 1972. Volunteers work in all areas of park operation and provide invaluable services and expertise to the park. To ensure that the current cadre of volunteers is increased, volunteers would be actively solicited, and support for “living history” and resource management groups would be provided.

Natural Resource Management

In order to ensure protection of the resources as well as visitor safety, routine patrols of the grounds and structures are conducted. Under this alternative, the level of these patrols would be increased. Restored historic structures in which historic artifacts and furnishings are located, or in which park functions are conducted, would be equipped with sprinkler systems for fire suppression.

In order to provide necessary water volume for the fire protection of historic buildings, the park’s water systems would be upgraded. This would involve upgrading lines that supply water from the town of Fort Davis. It also would involve making operational the park’s own water system. Approved fire suppression equipment, including a fire truck serviceable to fight structural fires, would be acquired, and training for employees would be increased to meet fire suppression needs.

The fort’s historic buildings that have been modified for electricity do not have electrical systems that meet National Electrical Code (NEC) standards. Under this alternative, the electrical systems in all buildings would be upgraded to meet NEC standards.

Wetlands—In this alternative, the South Channel, actually the original and main drainage feature on site, would still carry the majority of the runoff on site, but both the North Ditch and the South Channel dike would be reconstructed to aid in flood protection during low to moderate floods. Wetlands along the ephemeral South Channel would remain largely unchanged with these flows. Wetlands that were created by the North Ditch and the South Channel dike system would remain in place and receive periodic water during all flood events. No major impact to habitat or function is anticipated. Both the North Ditch and the South Channel dike system would be overwhelmed by flood flows of 50–100 year-events, since they are very light-duty structures. Thus, periodic maintenance of

the North Ditch and the South Channel dike system would be required after moderate-to heavy- flooding events, causing some short-term wetland and vegetation disturbance.

Floodplain/Flash Flood—Since the establishment of Fort Davis in 1854, military personnel and now park managers have been plagued by periodic flash flooding of the site. Intense thunderstorms, which are characteristic of the region, often produce high volumes of runoff water. Given the small size of the watershed, and the fort's position on an alluvial fan, some flooding may occur during summer months when rainfall is average or above average.

During the second fort period (1867–1891), the army constructed a series of dikes and ditches to alleviate flooding of the fort. These protective structures are still in use, but because of limited design effectiveness (less than 100-year flood protection), erosion, human disturbances, and extensive maintenance requirements, these safeguards are not adequate to protect the area. In this alternative, the South Channel, actually the original and main drainage feature on site, would still carry the majority of the runoff on site, but both the North Ditch and the South Channel dike would be reconstructed to aid in flood protection during low to moderate floods.

Protection would be provided to historic resources and to the visitor center for floods less than 100-year events. For moderate to heavy flooding events (greater than 100 year) the North Ditch and South Channel dike systems are likely to be overwhelmed. Because of the nonconfining nature of the alluvial fan, the overbank flows are likely to occur as sheet flows and should not attain substantial depth. Since the South Channel can only carry the 25–50 year flood flow, all greater storm events would cause some flooding damage to historic structures close to the channel.

Maintenance of the flood protective aspects of the North Ditch and the South Channel dike system would be required after moderate to heavy flooding events. Periodic grading, ditch cleaning, levee replacement, grade control installation, stone placement, and revegetation would be required.

Noise and Overflights—Increases in the amount of motor vehicle noise in the parking area can be attributed to an increase in the number of motor homes and buses, many of which do not turn off their engines after parking. Interpretive messages would be used and enforcement increased to reduce the noise levels in the parking area.

In order to add to the visitor's appreciation and understanding of the fort, a sound system projecting military recordings is used. The historic sounds, in turn, help to cover up modern sounds from the parking area and the adjacent highway. The sound system would be upgraded to the latest digital recordings for these military sounds.

The park would continue to maintain the high-quality visitor experience and ensure the protection of resources from detrimental effects caused by overflights. This condition does not exist at the present time. Should a situation arise in the future, appropriate studies would be undertaken and a recommendation proposed.

Air Quality—The air quality of the park is good, even though on some days, particularly those when the air currents are from the southeast, the site experiences visibility impairments. Recent air quality studies of the entire Trans-Pecos and Big Bend region, however, did not identify any one source of contamination. Fort Davis National Historic Site would continue to support air quality programs both in the private and public sectors. Messages addressing air quality would be incorporated into interpretive programs.

Possible Future Facility and Development Changes

The following possible future facility developments would be proposed under this alternative.

Phase I

- The post hospital would be partially restored and refurbished.
- The fire suppression system, including sprinkler systems in all buildings, would be upgraded.
- The park's water systems would be upgraded.
- The electrical systems would be upgraded.
- Building standards to meet ADA requirements in the post hospital and other restored buildings, where practical, would be improved.
- The administrative offices, auditorium, curator's office and museum storage area in historic building 20 would be remodeled.
- Buildings within the existing maintenance area would be upgraded to meet CFR and OSHA standards.
- One staff quarter unit would be remodeled to increase office space.
- Parking would be slightly modified to increase capacity.

Phase II

- The administrative offices would be relocated outside of the park. Vacated space would be used to increase the space for visitor services, research, and curatorial storage.
- Existing maintenance and employee complexes, and the curatorial "Bally" building would be removed. These functions would be moved outside of the park, thus enhancing the historic scene surrounding the fort.

Operational Costs

Phase I—Under this alternative funding would be sought for an increase of 4 FTEs, or an additional \$135,000 in base funding would be required. (See Table 1, Operational Costs.)

Phase II—Under this alternative phase II would require an additional 2 FTEs, or \$74,000 in base funding. (See Table 1.)

Development Costs

Phase I—This alternative would require an expenditure of about \$1,107,500 for development-related improvements. (See Possible Future Development Costs, Table 2.)

Phase II—This alternative would require an additional expenditure of about \$1,390,000 for development-related improvements, including funding for advanced planning. These improvements would be funded through partnerships as appropriate (See Table 2.)

Future Plans and Studies

- New Comprehensive Archeological Survey
- Condition Assessments of Archeological Sites
- Cultural Landscape Inventory
- Cultural Landscape Report
- Ethnographic Study
- Comprehensive Interpretive Plan
- Natural Resource Management Plan and Fauna Study
- Cultural Resource Management Plan
- Safety Plan
- Flash Flood Plan (includes Floodplain Map)
- Historic Preservation Plan identifying types and levels of treatment
- Structural Fire Management Plan
- Wildland Fire Management Plan
- Transportation Study: Should visitation reach 125,000 visitors a year, a study would be initiated to evaluate the feasibility of a transportation system from the town of Fort Davis.

Alternative D

General Emphasis

What makes Fort Davis National Historic Site unique among nationally significant cultural resource areas, including other National Park Service units, is the amount of remaining original fabric. In 1961, the fort

was authorized a National Historic Site because of the extent of unaltered historic foundations, ruins, and structures. In addition, the cultural landscape and viewsheds were considered as being much the same as they were when the army leased the land during the last half of the 19th century. Because of this uniqueness, resource protection and conservation are foremost in the development of any management objectives for the site.

In this alternative, any change in the fort's outward appearance would be minimal. There would be no further exterior restoration or modern development in the historic core. A well-balanced program of preservation, resource protection, and interpretation would be emphasized. Existing buildings, ruins, and foundations would undergo stabilization and conservation measures so as to preserve their historical integrity. Work would be done using in-kind materials and tested stabilization techniques.

This alternative would permit greater visitor access without negatively impacting the historic scene. The interior of the post hospital would be partially restored and refurnished to enhance the fort's story. To further preserve the historic integrity of the site, the administrative and maintenance functions, as well as employee housing and some curatorial storage, would be relocated outside of the park.

This alternative would broaden the interpretive themes to highlight the more complex role of Fort Davis in the history of the American West and would complement existing interpretive programs. These would include, but would not be limited to, programs that would instill a greater cognizance and appreciation of both the first and second forts. The current informational video would continue to be enjoyed by visitors, but improvements would be made to the programs featuring the sounds of the dress retreat program and the bugle calls.

The fort's history would be enhanced to include the stories of all groups and cultures related to that history. Interpretive programs would not only bring to light the role played by the military but would also emphasize the roles played by American Indians and civilians. The curriculum-based educational programs would be enhanced. The park would continue to encourage adjacent landowners to use their land in ways that complement park values. Mutually beneficial partnerships with educational institutions, private organizations, and individuals would be fostered and improved.

Outreach and Partnerships

A web site would be established that provides curriculum-based educational materials for grades K–12 for on-site and off-site use. In addition, the web site would have updated and detailed park information. It would contain web pages that provide authoritative information on the Buffalo Soldiers who served at Fort Davis. In addition, it would provide links to other authoritative sources on the Internet containing information on these soldiers of African-American descent, who served in the late 19th-century army.

Current partnerships with the Friends of Fort Davis National Historic Site and other local and area organizations whose focus is resource protection would be expanded. In addition, new partnerships with other preservation organizations and agencies, including the Texas Parks and Wildlife Department, would be actively developed.

An improved research facility requiring dedicated space and state-of-the-art technology would be provided to serve and support individuals/groups interested in the history of Fort Davis.



Cultural Resource Management

Curatorial—The park's museum collection encompasses archeological and historic artifacts, furnishings, photographs, herbarium specimens, and various 19th- and 20th-century fort records. The conditions necessary to preserve and protect these museum objects are identified in the National Park Service Checklist for Preservation and Protection of Museum Collections. Under this alternative, all deficiencies would be corrected with appropriate funding. This would involve the acquisition of new cabinets and expanded storage space. It would also provide for improved office space and the installation of environmental controls in buildings that house artifacts.

The park currently catalogues and enters into the National Park Service Automated National Catalog System approximately 250 items per year. Under this alternative, more artifacts would be conserved, catalogued,

and preserved through staff increases. Partnerships and funding for CPSUs and new internships would be actively solicited. The park's museum, which was installed in the mid-1960s, would be completely upgraded.

Archeology—Archeological sites would be preserved and protected using existing as well as more advanced methods of monitoring and conservation. Information gathered from analyzing, evaluating, and identifying artifacts from the sites would be shared with the public through exhibits and publications. Interns would be actively sought to assist with the recording of data and evaluation of the sites.

Historic Fabric—Much of the historic fabric of Fort Davis NHS consists of adobe and stone buildings, ruins, and foundations. Current conservation practices would be continued, but in addition, new state-of-the-art preservation techniques could be applied.

The national database lists 110 Fort Davis National Historic Site structures on the List of Classified Structures. According to park records there are many more. Under this alternative the inconsistency between the park records and the national listing would be resolved. The database would be completed, providing information on all known structures, ruins, and sites. The information would continually be updated, and monitoring would be provided through analysis of this data.



Foreground ROA—The unique stand of historic cottonwood trees, dating from the mid- to late 19th century, is adjacent to the paved roadway that leads from the entrance gate to the parking area. There is a picnic area this historic grove. Current natural resource management policies would be maintained, thereby emphasizing the perpetuation of the grove. The cultural landscape report (CLR) recommendations would be implemented as appropriate.

The functions in the maintenance complex, the “Bally” building (which is used as a museum collection storage facility), and the employee housing quarters would move to a location outside the park. The buildings would be removed.

Historic Core ROA—The eastern boundary of Fort Davis National Historic Site is State Highway 17. In recent years, truck traffic has increased on this route, but still a relatively quiet setting prevails on the fort grounds. This natural quiet serves as a backdrop for the daily presentation of historic bugle calls and the sounds of a dress retreat parade. Staff would continue to maintain this setting

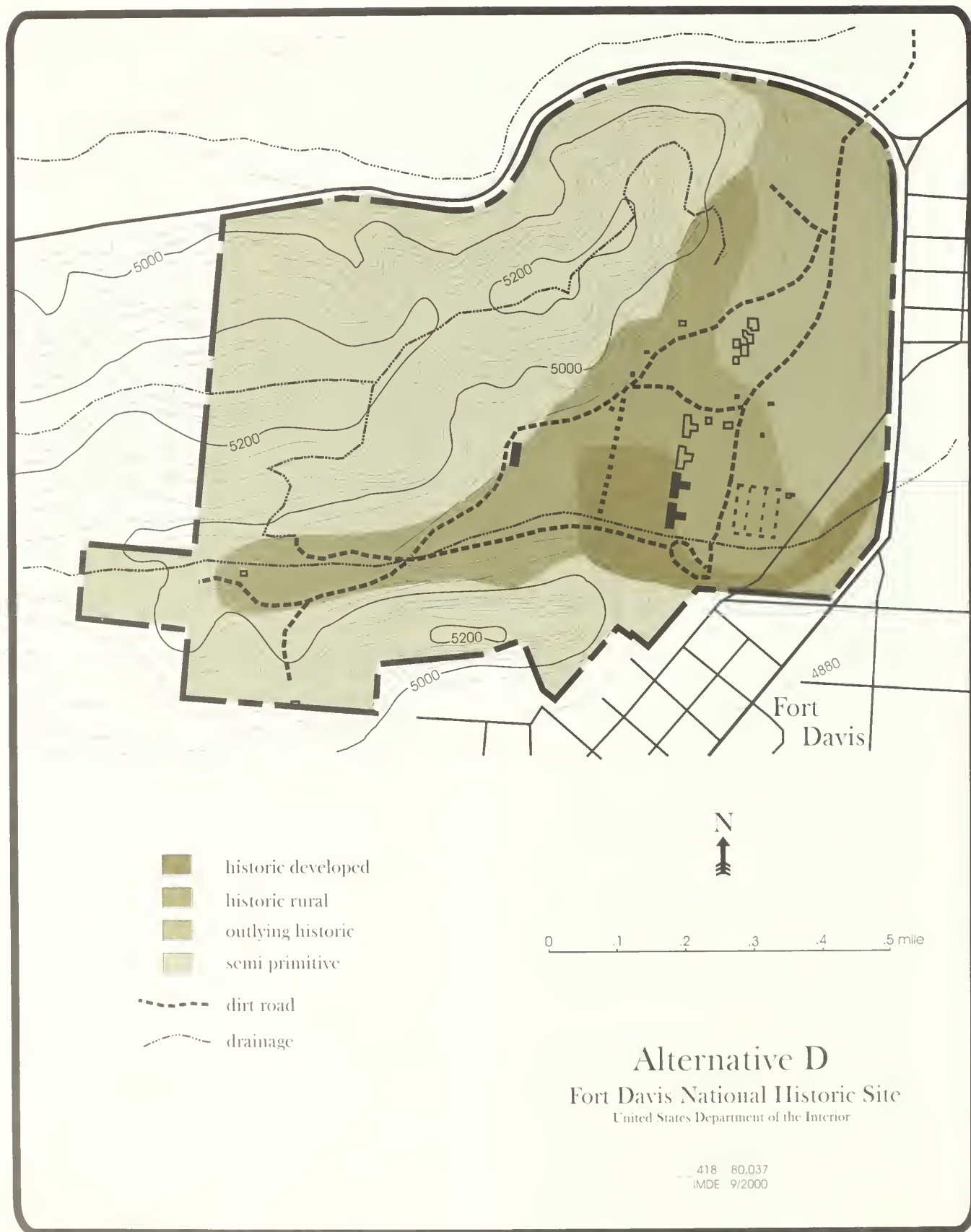
within the park. The recordings, however, would be revised to more closely reflect the military sounds of the 1880s, and the amplifying equipment used to project these sounds would be upgraded.

Recommendations in the cultural landscape report (CLR) would be implemented as appropriate. The present parking area contains spaces for cars, buses, motor homes, and two spaces for visitors with disabilities. Under this alternative, the parking area would be redesigned and slightly expanded to provide for more vehicles.

Backdrop ROA—For the most part, the appearance and environment of the natural backdrop of Fort Davis National Historic Site is rugged, with cliff walls featuring steep slopes that form prominent landmarks. This is the area that offers the majority of hiking and nature viewing opportunities. The backdrop landscape is significant to the fort’s history and helps to maintain its 19th-century appearance. The natural appearance and environment would be maintained.

Land Use Management

This alternative would provide for a decrease in facilities inside the park to support high-quality recreational



experiences and activities. Some facilities would be redesigned, moved, or relocated outside the park boundary. This alternative uses management prescriptions that emphasize appropriate levels of visitor experiences with appropriate levels of development. Management prescriptions (MP) describe how the park would be managed. These can be broken down as follows:

- About 25.1 acres (5.3%)—Historic Developed MP
- About 103.7 acres (21.9%)—Historic Rural MP
- About 74.7 acres (5.8%)—Outlying Historic MP
- About 270.4 acres (57.%)—Semi-Primitive MP

Interpretation

The foundation of the interpretive programs would be the story of Fort Davis presented from the viewpoints of the various cultural groups associated with its history. In addition to addressing the complete history of both the first and second forts through the perspective of the military, interpretive programs, literature, and exhibits would include the story from the perspectives of American Indians and civilians.

Staff would be increased and training would be provided so that all interpreters would achieve the full competencies identified in their career fields. Quality, curriculum-based educational programs and services would be available for grades K–12. Orientation talks and interpretive programs would include a resource protection message and information about natural resources. Research into 19th-century military and civilian records would be ongoing to ensure the accuracy and quality of interpretation programs, interpretive literature, and interpretive exhibits.

Because park interpreters often dress in the military and civilian clothing of the late 19th century in presenting programs and keeping open and interpreting furnished historic

buildings the living history clothes and equipment would be upgraded and adequate storage provided.

The park has had an active Volunteer-In-Parks program since 1972. Volunteers work in all areas of park operation and provide invaluable services and expertise to the park. To ensure that the current cadre of volunteers is increased, volunteers would be actively solicited, and support for “living history” and resource management groups would be provided.

Natural Resource Management

In order to ensure protection of the resources as well as visitor safety, routine patrols of the grounds and structures are conducted. The level of these patrols would be increased. Restored historic buildings, in which artifacts and furnishings are located or in which park functions are conducted, would be equipped with sprinkler systems for fire suppression.

In order to provide necessary water volume for the fire protection of historic buildings, the park’s water systems would be upgraded. This would involve upgrading water lines that supply water from the town of Fort Davis. It also would involve making operational the park’s own water system. Approved fire suppression equipment, including a fire truck serviceable to fight structural fires, would be acquired, and training for employees would be increased to meet fire suppression needs.

The fort’s historic buildings that have been modified for electricity do not have electrical systems that meet National Electrical Code (NEC) standards. Under this alternative, the electrical systems in all buildings would be upgraded to meet NEC standards.

Wetlands—In this alternative, the South Channel, actually the original and main drainage feature on site, would be optimized for water conveyance and flood protection. Wetlands along the ephemeral South Channel would remain largely

unchanged, even with increased flows. Wetlands that were created by the North Ditch and the South Channel dike system would remain in place but would be drier during low to moderate runoff events. No major impact to habitat or function is anticipated. The South Channel dike system would incur some disruption during periodic moderate to heavy flooding events. Periodic maintenance of the South Channel after heavy flooding events would cause some short-term wetland and vegetation disturbance.

Floodplain/Flash Flood—Since the establishment of Fort Davis in 1854, military personnel and now park managers have been plagued by periodic flash flooding of the site. Intense thunderstorms, which are characteristic of the region, often produce high volumes of runoff water. Given the small size of the watershed and the fort's position on an alluvial fan, some flooding may occur during summer months when rainfall is average or above average.

During the second fort period (1867–1891), the army constructed a series of dikes and ditches to alleviate flooding of the fort. These protective structures are still in use, but because of limited design effectiveness (less than 100-year flood protection), erosion, human disturbances, and extensive maintenance requirements, these safeguards are not adequate to protect the area. The Water Resources Division of the National Park Service has identified options for improving the management of floodwaters in and around Fort Davis National Historic Site. This alternative involves the concentration of runoff into the South Channel. Historic diversions to the North Ditch and the South Channel dike system would be structurally prevented, concentrating flows to the South Channel only. Since the South Channel can only carry the 25–50 year flood flow, all greater storm events would cause some flooding damage to historic structures close to the channel.

Noise and Overflights—Increases in the amount of motor vehicle noise in the parking area can be attributed to an increase in the number of motor homes and buses, many of which do not turn off their engines after parking. Interpretive messages would be used and enforcement increased to reduce the noise levels in the parking area.

In order to add to the visitor's appreciation and understanding of the fort, a sound system projecting military sounds is used. The historic sounds, in turn help to cover up modern sounds from the parking area and the adjacent highway. The sound system would be upgraded to the latest digital recordings for these military sounds.

The park would continue to maintain the high-quality visitor experience and ensure the protection of resources from detrimental effects caused by overflights. This condition does not exist at the present time. Should a situation arise in the future, appropriate studies would be undertaken and a recommendation proposed.

Air Quality—The air quality of the park is good, even though on some days, particularly those when the air currents are from the southeast, the site experiences visibility impairments. Recent air quality studies of the entire Trans-Pecos and Big Bend region, however, did not identify any one source of contamination. Fort Davis National Historic Site will continue to support air quality programs both in the private and public sectors. Messages addressing air quality would be incorporated into interpretive programs.

Possible Future Facility and Development Changes

The following possible future facility developments would be proposed under this alternative.

- The post hospital would be partially restored and refurnished.

- The fire suppression system, including sprinkler systems in all buildings, would be upgraded.
- The park's water systems would be upgraded.
- The electrical systems would be upgraded.
- Building standards to meet ADA requirements in the post hospital and other restored buildings, where practical, would be improved.
- Existing maintenance and employee complexes, and the curatorial "Bally" building would be removed. These functions would be moved outside of the park, thus enhancing the historic scene surrounding the fort.
- The administrative offices would be relocated outside of the park. Vacated space would be used to increase the space for visitor services, research, and curatorial storage.
- Parking would be slightly increased and redesigned to increase capacity.

Operational Costs

Under this alternative funding would be sought for an increase of 6 FTEs, or \$209,000 in base funding. (See Table 1, Operational Costs.)

Development Costs

This alternative would require an expenditure of about \$2,758,500 for development-related improvements. (See Table 2, Possible Future Development Costs.)

Future Plans and Studies

- New Comprehensive Archeological Survey/Condition Assessments of Archeological Sites
- Cultural Landscape Inventory
- Cultural Landscape Report
- Ethnographic Study
- Comprehensive Interpretive Plan
- Natural Resource Management Plan and Fauna Study
- Cultural Resource Management Plan
- Safety Plan
- Flash Flood Plan (includes Floodplain Map)
- Historic Preservation Plan identifying types and levels of treatment
- Structural Fire Management Plan
- Wildland Fire Management Plan
- Transportation Study: Should visitation reach 125,000 visitors a year, a study would be initiated to evaluate the feasibility of a transportation system from the town of Fort Davis.

TABLE 1
OPERATIONAL COSTS
(Increases in FTEs by Alternative)

Description	A	B	C*	D*
Education specialist, GS-9				1.0
Clerk typist Maint., GS-4			1.0	1.0
Interpretation (Seasonals, GS-4)			1.0	1.5
Seasonal Museum Aide (Seasonal, GS4)			0.5	0.5
Custodial, WG-2			0.5	1.0
Budget Clerk, GS-7			1.0	1.0
Phase II—Cultural Resources			(2.0)	
TOTAL			4.0	6.0
<i>(Only if phase II appropriate.)</i>			(6.0)	

Alternative C: Phase I: funding sought for an additional 4 FTEs, or \$135,000 for increased staff. Phase II: funding may be sought for an additional of 2 FTEs (\$74,000).

Alternative D funding sought for an additional 6 FTEs, or \$209,000 for increased staff.

* Indicates Additional Full-Time Equivalents (FTE)

TABLE 2
POSSIBLE FUTURE DEVELOPMENT COSTS

Description	A	B	C**	D**
Sprinkler Systems		\$270,000	\$270,000	\$270,000
Water System		\$95,000	\$95,000	\$95,000
Upgrade Electrical System		\$25,000	\$25,000	\$ 25,000
Improved ADA Stds. for Hospital		\$ 8,000		
Improved ADA Stds. for Hospital/Other			\$ 16,500	\$ 16,500
Expansion of Existing Maint. Bldgs.		\$ 120,000	\$120,000	
Move Facilities/Demolition/New Facilities			(\$ 818,000)*	\$ 818,000
Remodel Admin. Facilities			\$65,000	\$50,000
Remodel Staff Quarters		\$25,000	\$ 25,000	
Move Admin. Facilities			(\$ 304,000)*	\$ 304,000
Manage Parking		\$ 4,000	\$ 85,000	\$ 112,000
Modernize Museum/New Displays				\$ 365,000
Environmental/Cabinets			\$107,000	\$ 107,000
New Display Space			\$ 15,000	
Flash Flood Mitigation		\$ 20,000	\$ 75,000	\$ 75,000
SUBTOTAL		\$567,000	\$898,500	\$2,237,500
Equipment Cost (Fire Truck and Hoses)		\$74,000	\$74,000	\$74,000
Project Planning and Advance Cost		\$56,000	\$135,000	\$447,000
TOTAL		\$697,000	\$1,107,500	\$2,758,500
*Phase II (Partnership/other funding, including 25% for Project Planning and Advance Cost)			(\$1,122,000)	

** Note: Alternatives C and D include the partial restoration and refurbishing of the post hospital from private funding sources. Alternative C includes partnership funding for maintenance facility/employee housing, and curatorial building relocation.

TABLE 3—COMPARISON OF ALTERNATIVES

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
General Emphasis	<ul style="list-style-type: none"> + Under the no-action alternative, existing administrative, maintenance, land use, and resource management activities would continue—with current use serving as the basis for mapping management prescriptions. 	<ul style="list-style-type: none"> + This alternative would protect and preserve the fort's historic setting and historic viewscape and would minimize modern intrusions in the historic core area. 	<ul style="list-style-type: none"> + In this alternative, any change in the fort's outward appearance would be minimal, with no further exterior restoration or modern development in the historic core. 	<ul style="list-style-type: none"> + This alternative would broaden the interpretive themes to highlight the more complex role of Fort Davis in the history of the American West.
	<ul style="list-style-type: none"> + Existing levels of interpretation and resource protection would continue. 	<ul style="list-style-type: none"> + Programs would be limited to the minimum necessary to meet interpretive, research, and educational needs. 	<ul style="list-style-type: none"> + A well-balanced program of preservation, resource protection, and interpretation would be emphasized. 	<ul style="list-style-type: none"> + A well-balanced program of preservation, resource protection, and interpretation would be emphasized.
	<ul style="list-style-type: none"> + Loss of original ruins and portions of structures could be expected. 	<ul style="list-style-type: none"> + Loss of original ruins and portions of structures could be expected. 	<ul style="list-style-type: none"> + Broader interpretive themes of the more complex role of Fort Davis in the history of the American West—i.e., a greater cognizance and appreciation of both first and second Fort Davis would complement existing interpretive programs. 	<ul style="list-style-type: none"> + Broader interpretive themes of the more complex role of Fort Davis in the history of the American West—i.e., a greater cognizance and appreciation of both first and second Fort Davis would complement existing interpretive programs.
	<ul style="list-style-type: none"> + Existing visitor facilities would be maintained to support current activities and no new facilities would be considered or built. 	<ul style="list-style-type: none"> + No new facilities would be considered or built. 	<ul style="list-style-type: none"> + The historic sense of quiet would be maintained. With phase II implementation, permits greater visitor access without negatively impacting the historic scene. 	<ul style="list-style-type: none"> + Permits greater visitor access without negatively impacting the historic scene. The historic sense of quiet would be maintained.
	<ul style="list-style-type: none"> + The historic sense of quiet would be maintained. 	<ul style="list-style-type: none"> + The historic sense of quiet would be maintained. 	<ul style="list-style-type: none"> + The story of all groups and cultures related to the fort's history would be enhanced. Curriculum-based educational programs would be available. 	<ul style="list-style-type: none"> + The story of all groups and cultures related to the fort's history would be enhanced. Curriculum-based educational programs would be available.
	<ul style="list-style-type: none"> + Continue to encourage adjacent landowners to use their land in ways that complement park values. 	<ul style="list-style-type: none"> + Continue to encourage adjacent landowners to use their land in ways that complement park values. 	<ul style="list-style-type: none"> + Continue to encourage adjacent landowners to use their land in ways that complement park values. 	<ul style="list-style-type: none"> + Continue to encourage adjacent landowners to use their land in ways that complement park values.
	<ul style="list-style-type: none"> + Mutually beneficial partnerships would continue to be fostered. 	<ul style="list-style-type: none"> + Mutually beneficial partnerships would continue to be fostered and improved. 	<ul style="list-style-type: none"> + Mutually beneficial partnerships with educational institutions, private organizations, and individuals would be fostered and improved. 	<ul style="list-style-type: none"> + Mutually beneficial partnerships with educational institutions, private organizations, and individuals would be fostered and improved.

TABLE 3—COMPARISON OF ALTERNATIVES

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Outreach & Partnerships	+ A web site would be established that provides basic information about the park.	+ A web site would be established that provides basic and educational information about the park. A web page on the site would provide basic information on the Buffalo Soldiers as well as links to other authoritative sources on the Internet.	+ A web site would be established that provides curriculum-based grades K–12 educational material for educators for on-site and off-site use. In addition, the web site would have updated and detailed park information. It would contain web pages that provide authoritative information on Buffalo Soldiers at Ft. Davis.	+ A web site would be established that provides curriculum-based grades K–12 educational material for educators for on-site and off-site use. In addition, the web site would have updated and detailed park information. It would contain web pages that provide authoritative information on Buffalo Soldiers at Ft. Davis.
	+ Basic education programs would be available.	+ Basic education programs would be available.	+ Curriculum-based education programs/materials for grades K–12 would be available.	+ Curriculum-based education programs/materials for grades K–12 would be available.
	+ The current program for encouraging partnerships would be maintained.	+ The current program for encouraging partnerships would be maintained.	+ Programs for partnerships would be actively solicited and expanded.	+ Programs for partnerships would be actively solicited and expanded.
	+ The existing research facility would be maintained and made accessible to the general public.	+ The existing research facility would be maintained and made accessible to the general public.	+ The existing research and library facility would be expanded and upgraded.	+ A new park study/research facility (dedicated space/state-of-the-art technology) would be provided to serve and support individuals/groups interested in the history of Ft. Davis.

TABLE 3—COMPARISON OF ALTERNATIVES

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Cultural Resource Management	<u>Curatorial</u> + Some deficiencies would continue to exist. + Existing levels of curatorial work would continue. + New opportunities for partnerships and funding would be explored. + Exhibits would be maintained and rotated periodically.	<u>Curatorial</u> + Some improvements would be made to correct deficiencies. + Existing levels of curatorial work would continue. + New opportunities for partnerships and funding would be explored. + Exhibits would be maintained and rotated periodically.	<u>Curatorial</u> + Deficiencies would be corrected with appropriate funding. This would involve the acquisition of new cabinets and expanded storage space. It would also provide for improved office space and the installation of environmental controls in buildings that house artifacts. + More artifacts would be conserved, catalogued, and preserved through staff increases. + Partnerships and funding for CESUs and new internships would be actively solicited. + Display space would be increased and modernized.	<u>Curatorial</u> + Deficiencies would be corrected with appropriate funding. This would involve the acquisition of new cabinets and expanded storage space. It would also provide for improved office space and the installation of environmental controls in buildings that house artifacts. + More artifacts would be conserved, catalogued, and preserved through staff increases. + Partnerships and funding for CESUs and new internships would be actively solicited. + Museum facility would be completely upgraded.
	<u>Archeology</u> + Information on history and artifacts would be shared with the public (no change in existing methods).	<u>Archeology</u> + Information on history and artifacts would be shared with the public (no change in existing methods). + A limited internship program would be developed.	<u>Archeology</u> + Information on history and artifacts would be shared with the public through exhibits and publications. + Internship programs would be actively sought.	<u>Archeology</u> + Information on history and artifacts would be shared with the public through exhibits and publications. + Internship programs would be actively sought.
	<u>Historic Fabric</u> + Current practices would be continued. + Database would be incomplete. Monitoring would be conducted periodically.	<u>Historic Fabric</u> + Current practices would be continued. + Database would be completed, providing information on all known structures, ruins, and sites. Monitoring would be provided through data analysis of this information.	<u>Historic Fabric</u> + Current practices would be continued. State-of-the-art preservation techniques would be applied. + Database would be completed, providing information on all known structures, ruins, and sites. Monitoring would be provided through data analysis of this information.	<u>Historic Fabric</u> + Current practices would be continued. State-of-the-art preservation techniques could be applied. + Database would be completed, providing information on all known structures, ruins, and sites. Monitoring would be provided through data analysis of this information.
Foreground ROA	+ Natural Resource Management would emphasize the perpetuation of the cottonwood grove.	+ Natural Resource Management would emphasize the perpetuation of the cottonwood grove. + The Cultural Landscape Report (CLR) recommendations would be implemented as appropriate.	+ Natural Resource Management would emphasize the perpetuation of the cottonwood grove. + The Cultural Landscape Report (CLR) recommendations would be implemented as appropriate. + With phase II Implementation, the function in the maintenance complex, Bally building, and quarters would move to a location outside the park. The buildings would be removed.	+ Natural Resource Management would emphasize the perpetuation of the cottonwood grove. + The Cultural Landscape Report (CLR) recommendations would be implemented as appropriate. + The function in the maintenance complex, Bally building, and quarters would move to a location outside the park. The buildings would be removed.

TABLE 3—COMPARISON OF ALTERNATIVES

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Historic Core ROA	<p>+ Natural quiet would be maintained as a backdrop for military sounds. Recordings would be the same as current conditions.</p> <p>+ No change to parking area.</p>	<p>+ Natural quiet would be maintained as a backdrop for military sounds. Recordings would be the same as current conditions.</p> <p>+ The Cultural Landscape Report (CLR) recommendations would be implemented as appropriate.</p> <p>+ Parking area would be modified.</p>	<p>+ Natural quiet would be maintained as a backdrop for military sounds. Recordings would be revised to those reflecting military sounds of the 1880s.</p> <p>+ The Cultural Landscape Report (CLR) recommendations would be implemented as appropriate.</p> <p>+ Parking area would be redesigned and slightly expanded.</p>	<p>+ Natural quiet would be maintained as a backdrop for military sounds. Recordings would be revised to those reflecting military sounds of the 1880s.</p> <p>+ The Cultural Landscape Report (CLR) recommendations would be implemented as appropriate.</p> <p>+ Parking area would be redesigned and slightly expanded.</p>
Backdrop	<p>+ The natural appearance and environment would be maintained. (Existing management would continue.)</p>	<p>+ The natural appearance and environment would be maintained. (Existing management would continue.)</p>	<p>+ The natural appearance and environment would be maintained. (Existing management would continue.)</p>	<p>+ The natural appearance and environment would be maintained. (Existing management would continue.)</p>
Land Use Management	<p>+ No Change from Existing Management.</p>	<p>+ Historic Developed—31.9 acres</p> <p>+ Historic Rural—97.1 acres</p> <p>+ Outlying Historic—68.4 acres</p> <p>+ Semi-Primitive—276.8 acres</p>	<p>+ Historic Developed—31.9 (25.5*) acres</p> <p>+ Historic Rural—97.1 (104.1*) acres</p> <p>+ Outlying Historic—68.4 (74.9*) acres</p> <p>+ Semi-Primitive—276.8 (270.7*) acres</p> <p><i>*Phase II implementation</i></p>	<p>+ Historic Developed—25.5 acres</p> <p>+ Historic Rural—104.1 acres</p> <p>+ Outlying Historic—74.9 acres</p> <p>+ Semi-Primitive—270.7 acres</p>

TABLE 3—COMPARISON OF ALTERNATIVES

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Interpretation	<ul style="list-style-type: none"> + The story of Fort Davis would continue to be presented from viewpoint of the military. + Training would be provided based on available funding. + Existing curriculum would be provided through educational programs and services. + Interpretation would include a resource protection message. + Ongoing research would ensure the accuracy and quality of interpretation. + Living history clothes and equipment would be maintained. + The current cadre of volunteers would be maintained. New volunteers would be recruited. 	<ul style="list-style-type: none"> + The story of Fort Davis would be presented from viewpoint of the diverse cultural groups associated with the fort's history. + Basic competency level of interpretive staff would be achieved through training, as funding became available. + Existing curriculum would be provided through educational programs and services. + Interpretation would include a resource protection message and information about natural resources. + Ongoing research would ensure the accuracy and quality of interpretation. + Living history clothes and equipment would be maintained. + The current cadre of volunteers would be maintained. New volunteers would be recruited. 	<ul style="list-style-type: none"> + The foundation of the interpretive programs would be the story of Fort Davis presented from the viewpoints of diverse cultural groups. + Staff would be increased, and training would be provided so that interpreters achieve a full performance competency level. + Curriculum-based educational programs and services would be developed for grades K–12. + Interpretation would include a resource protection message and information about natural resources. + Ongoing research would ensure the accuracy and quality of interpretation. + Living history clothes and equipment would be upgraded and adequate storage provided. + Volunteers would be actively solicited. Support for living history and resource management groups would be provided. 	<ul style="list-style-type: none"> + The foundation of the interpretive programs would be the story of Fort Davis presented from the viewpoints of diverse cultural groups. + Staff would be increased, and training would be provided so that interpreters achieve a full performance competency level. + Curriculum-based educational programs and services would be developed for grades K–12. + Interpretation would include a resource protection message and information about natural resources. + Ongoing research would ensure the accuracy and quality of interpretation. + Living history clothes and equipment would be upgraded and adequate storage provided. + Volunteers would be actively solicited. Support for living history and resource management groups would be provided.

TABLE 3—COMPARISON OF ALTERNATIVES

Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
<ul style="list-style-type: none"> + The current level of patrols would be maintained. + One structure would be protected with a sprinkler system (for fire suppression). + An inadequate water system/supply to meet protection needs would remain. + Inadequate equipment and training to meet fire suppression needs would remain. + Buildings' electrical systems that do not meet National Electrical Code (NEC) standards would remain. <p><u>Wetlands</u></p> <ul style="list-style-type: none"> + Periodic disruption continues to all wetland stream corridors because of flooding. + Function of created wetlands in North Ditch and South Channel dikes would cease. <p><u>Floodplains/Flash Flood</u></p> <ul style="list-style-type: none"> + There would be insufficient safeguards from flash flooding to protect park resources. <p><u>Noise and Overflights</u></p> <ul style="list-style-type: none"> + Periodic monitoring of parking area would be used to reduce noise. + A sound system for military recordings would continued to be used. Resources would be protected from detrimental effects caused by overflights. <p><u>Air Quality</u></p> <ul style="list-style-type: none"> + Park supports air quality programs. 	<ul style="list-style-type: none"> + The current level of patrols would be maintained. + Required sprinkler systems would be installed in all buildings for fire suppression. + The water system/supply would be upgraded to meet protection needs. + Equipment and training for fire suppression would be increased to meet fire suppression needs. + Buildings' electrical systems would be upgraded to meet NEC standard. <p><u>Wetlands</u></p> <ul style="list-style-type: none"> + Short-term disruption of created wetlands in North Ditch during rehabilitation. + Periodic disruption continues to South Channel dike system wetlands because of flooding. + Periodic maintenance to North Ditch would cause short-term disruption. <p><u>Floodplains/Flash Flood</u></p> <ul style="list-style-type: none"> + The expanded North Ditch Option would be used to protect park resources from minor to moderate flash floods. + Periodic maintenance to North Ditch required for flood protection. <p><u>Noise and Overflights</u></p> <ul style="list-style-type: none"> + Parking area would be monitored periodically in order to reduce noise. + Improvement would be made to maintain a high-quality sound system for military recordings. Resources would be protected from detrimental effects caused by overflights. <p><u>Air Quality</u></p> <ul style="list-style-type: none"> + Park supports air quality programs. 	<ul style="list-style-type: none"> + The level of patrols would be increased. + Required sprinkler systems would be installed in all buildings for fire suppression. + The water system/supply would be upgraded to meet protection needs. + Equipment and training for fire suppression would be increased to meet fire suppression needs. + Buildings' electrical systems would be upgraded to meet NEC standards. <p><u>Wetlands</u></p> <ul style="list-style-type: none"> + Short-term disruption of created wetlands in North Ditch and South Channel dike system during rehabilitation. + Function of North Ditch and South Channel dike wetlands preserved. + Periodic maintenance to North Ditch and South Channel dikes would cause short-term disruption. <p><u>Floodplains/Flash Flood</u></p> <ul style="list-style-type: none"> + An expanded North Ditch option and South Channel dike system would be used to protect park resources from minor to moderate flash floods. This would include rebuilding the check dam in the South Channel and increasing the height of the two lower dikes. + Periodic maintenance to North Ditch and South Channel dikes required for flood protection. <p><u>Noise and Overflights</u></p> <ul style="list-style-type: none"> + Interpretive messages used and enforcement increased to reduce noise in parking area. + The sound system would be upgraded to the latest digital recordings for military sounds. Resources would be protected from detrimental effects caused by overflights. <p><u>Air Quality</u></p> <ul style="list-style-type: none"> + Park supports air quality programs. Message would be incorporated into interpretive programs. 	<ul style="list-style-type: none"> + The level of patrols would be increased. + Required sprinkler systems would be installed in all buildings for fire suppression. + The water system/supply would be upgraded to meet protection needs. + Equipment and training for fire suppression would be increased to meet fire suppression needs. + Buildings' electrical systems would be upgraded to meet NEC standards. <p><u>Wetlands</u></p> <ul style="list-style-type: none"> + Short-term disruption of wetlands in South Channel during rehabilitation. + Function of created North Ditch and South Channel dike wetlands disrupted. + Periodic maintenance to South Channel would cause short-term wetland disruption. <p><u>Floodplains/Flash Flood</u></p> <ul style="list-style-type: none"> + An improved South Channel stream corridor would be used to protect park resources from minor to moderate flash floods. This would include rebuilding portions of the South Channel, including grade control and diversions. + Periodic maintenance to South Channel would be required for flood protection. <p><u>Noise and Overflights</u></p> <ul style="list-style-type: none"> + Interpretive messages used and enforcement increased to reduce noise in parking area. + Sound system upgraded to the latest digital recordings for military sounds. Resources would be protected from detrimental effects caused by overflights. <p><u>Air Quality</u></p> <ul style="list-style-type: none"> + Park supports air quality programs. Message would be incorporated into interpretive programs.

TABLE 3—COMPARISON OF ALTERNATIVES

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Possible Future Facility and Development Changes	<p>+ There would be no changes to facilities.</p>	<p>+ The following possible future facility developments would be proposed under this alternative:</p> <ul style="list-style-type: none"> - sprinkler systems. - water system. - upgrade electrical system. - improved ADA standards for the post hospital. - Expansion of existing maintenance buildings within existing area to meet CFR and OSHA standards. - Remodel staff quarters to increase office space. - Modify parking area within the existing space to increase capacity. 	<p><u>Phase I</u></p> <p>+ The following possible future facility developments would be proposed under this alternative:</p> <ul style="list-style-type: none"> - sprinkler systems. - water system. - upgrade electrical system. - improved ADA standards for the post hospital and other restored buildings where practical. - The existing maintenance buildings would be expanded within the existing area to meet CFR and OSHA standards. - Remodel staff quarters to increase office space. - Parking area would be redesigned to increase capacity. - Partial restoration of post hospital. - Remodel administrative wing. <p><u>Phase II</u></p> <ul style="list-style-type: none"> - The administrative offices would be relocated outside of the park. Vacated space would be used to increase the space for visitor services, research, and curatorial storage. - Existing maintenance and employee complexes, and the curatorial "Bally" building would be removed. These functions would be moved outside of the park, thus enhancing the historic scene surrounding the fort. 	<p>+ The following possible future facility developments would be proposed under this alternative:</p> <ul style="list-style-type: none"> - sprinkler systems. - water system. - upgrade electrical system. - improved ADA standards for the post hospital and other restored buildings where practical. - The maintenance and employee complexes and the curatorial Bally building would be removed. Their functions would be moved outside of the park, which would enhance the historic scene surrounding the fort. - The parking area would be slightly increased and redesigned to increase overall capacity. - Partial restoration of post hospital. - The administrative offices would be relocated outside of the park. The vacated space would be used to increase the space for visitor services, research, and curatorial storage.
Operational Costs	Current Budget and Staff.	Current Budget and Staff.	<p><u>Phase I:</u> Increase of 4 FTEs, or \$135,000 in base funding.</p> <p><u>Phase II:</u> Funding may be sought for 2 additional FTEs (\$74,000).</p> <p>(See Table 1, Operational Costs.)</p>	Increase of 6 FTEs or \$209,000 in base funding (See Table 1, Operational Costs.)
Development Costs	Current Budget.	Increase of \$697,000. (See Table 2, Possible Future Development Costs.)	<p><u>Phase I</u></p> <p>Increase of \$1,107,500.</p> <p><u>Phase II</u></p> <p>Increase of \$1,122,000.</p> <p>(See Table 2, Possible Future Development Costs.)</p>	Increase of \$2,758,500. (See Table 2, Possible Future Development Costs.)

TABLE 3—COMPARISON OF ALTERNATIVES

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Future Plans and Studies	+ No Change	+ New Comprehensive Archeological Survey + Condition assessments for archeological sites + Cultural Landscape Inventory + Cultural Landscape Report + Ethnographic Study + Structural Fire Management Plan + Wildland Fire Management Plan + Comprehensive Interpretive Plan + Natural Resource Management Plan and Fauna Study + Cultural Resource Management Plan + Safety Plan + Flash Flood Plan (includes Floodplain Map) + Historic Preservation Plan identifying types and levels of treatment + Transportation Study: Should visitation reach 125,000 visitors a year, a study would be initiated to evaluate the feasibility of a transportation system from the town of Fort Davis.	+ New Comprehensive Archeological Survey + Condition assessments for archeological sites + Cultural Landscape Inventory + Cultural Landscape Report + Ethnographic Study + Structural Fire Management Plan + Wildland Fire Management Plan + Comprehensive Interpretive Plan + Natural Resource Management Plan and Fauna Study + Cultural Resource Management Plan + Safety Plan + Flash Flood Plan (includes Floodplain Map) + Historic Preservation Plan identifying types and levels of treatment + Transportation Study: Should visitation reach 125,000 visitors a year, a study would be initiated to evaluate the feasibility of a transportation system from the town of Fort Davis.	+ New Comprehensive Archeological Survey + Condition assessments for archeological sites + Cultural Landscape Inventory + Cultural Landscape Report + Ethnographic Study + Structural Fire Management Plan + Wildland Fire Management Plan + Comprehensive Interpretive Plan + Natural Resource Management Plan and Fauna Study + Cultural Resource Management Plan + Safety Plan + Flash Flood Plan (includes Floodplain Map) + Historic Preservation Plan identifying types and levels of treatment + Transportation Study: Should visitation reach 125,000 visitors a year, a study would be initiated to evaluate the feasibility of a transportation system from the town of Fort Davis.

TABLE 4—COMPARISON OF ENVIRONMENTAL IMPACTS

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Visitor Experience	+ No change on visitor experience.	+ Same as Alternative C, but less emphasis on increased programs.	+ Focuses on improving visitor services/access to information via outreach/park programs. + No change in visitor flow/use patterns. Improvements in parking; increase capacity. + Broad range of interpretation and orientation at visitor center. + Visitation exceeds 125,000/transportation study conducted—evaluating alternative means of accessing the fort to maintain a quality visitor experience/minimize impact of larger vehicles on the historic scene. + Quality of stay to improve—through more and better programs. +With the implementation of Phase II, more emphasis on facility and space improvements to accommodate visitors and improve the historic scene.	+ Same as Alternative C, but more emphasis on facility and space improvements to accommodate visitors and improve the historic scene.
Archeological Resources	+ No effect on known sites--locations well documented/surveyed. + Ground-disturbing activity monitored to mitigate any impacts. + Sites near visitor-use areas—vulnerable to surface damage—monitor to protect. + Periodic increased water flows may erode areas in the alluvial floodplain—a possible impact on archeological resources.	+ No effect on known sites--locations well documented/surveyed. + Ground-disturbing activity monitored to mitigate any impacts. + Sites near visitor-use areas—vulnerable to surface damage—monitor to protect. + Periodic increased water flows may erode areas in the alluvial floodplain—a possible impact on archeological resources.	+ No effect on known sites--locations well documented/surveyed. + Ground-disturbing activity monitored to mitigate any impacts. + Sites near visitor-use areas—vulnerable to surface damage—monitor to protect. + Periodic increased water flows may erode areas in the alluvial floodplain—a possible impact on archeological resources.	+ No effect on known sites--locations well documented/surveyed. + Ground-disturbing activity monitored to mitigate any impacts. + Sites near visitor-use areas—vulnerable to surface damage—monitor to protect. + Periodic increased water flows may erode areas in the alluvial floodplain—a possible impact on archeological resources.

TABLE 4—COMPARISON OF ENVIRONMENTAL IMPACTS

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Cultural Landscape and Historic Resources	<ul style="list-style-type: none"> + Historic landscape managed as historic landscape resource. + Any modifications not to reduce area integrity. 	<ul style="list-style-type: none"> + Historic landscape managed as historic landscape resource. + Any modifications not to reduce area integrity. 	<ul style="list-style-type: none"> + Historic landscape managed as historic landscape resource. + Minor changes in parking carefully done to maintain integrity of landscape areas/features. 	<ul style="list-style-type: none"> + Historic landscape managed as historic landscape resource. + Changes in parking carefully done to maintain integrity of landscape areas/features.
	<ul style="list-style-type: none"> + No adverse effect on this landscape. + Pending completion of CLR, integrity/principles/materials maintained. 	<ul style="list-style-type: none"> + No adverse effect on this landscape. + Pending completion of CLR, integrity/principles/materials maintained. +Minimize modern intrusions on viewsheds. + Retain the less-developed, more historic views from the historic landscape within the park. 	<ul style="list-style-type: none"> + No adverse effect on this landscape. + Pending completion of CLR, integrity/principles/materials maintained. +Minimize modern intrusions on viewsheds. + Retain the less-developed, more historic views from the historic landscape within the park. 	<ul style="list-style-type: none"> + No adverse effect on this landscape. + Pending completion of CLR, integrity/principles/materials maintained. +Minimize modern intrusions on viewsheds. + Retain the less-developed, more historic views from the historic landscape within the park.
	<ul style="list-style-type: none"> + No changes to historic/scenic vistas from within the park. 	<ul style="list-style-type: none"> + No changes to historic/scenic vistas from within the park. 	<ul style="list-style-type: none"> + No changes to historic/scenic vistas from within the park. + With phase II implementation, relocation of maintenance facility, employee housing, Bally bldg. to outside park would improve vistas/views of fort from State Highways 17 and 118. + With phase II implementation, change would provide more historically accurate/attractive approach to fort without adversely impacting historic structures/cultural landscape. 	<ul style="list-style-type: none"> + Relocation of maintenance facility, employee housing, Bally bldg. to outside park would improve vistas/views of fort from State Highways 17 and 118. + Change would provide more historically accurate/attractive approach to fort without adversely impacting historic structures/cultural landscape.
	<ul style="list-style-type: none"> + Historic structures—buildings and facilities open to the public not improved—some remain inaccessible to mobility impaired. 	<ul style="list-style-type: none"> + Historic structures—improvements to make post hospital accessible to mobility-impaired visitors. + Installation of fire suppression equipment would not adversely affect historic resources— will add to their protection. + North Ditch reconstructed for flood control—could result in an adverse effect to the historic fabric. Mitigation--recording reduces impact to no adverse effect. 	<ul style="list-style-type: none"> + Historic structures—improvements to make post hospital and other historic buildings accessible to mobility-impaired visitors. + Installation of fire suppression equipment would not adversely affect historic resources—will add to their protection. +North Ditch/South Ditch reconstructed for flood control—could result in adverse effect to historic fabric. Mitigation--recording reduces impact to no adverse effect. 	<ul style="list-style-type: none"> + Historic structures—improvements to make post hospital and other historic buildings accessible to mobility-impaired visitors. + Installation of fire suppression equipment would not adversely affect historic resources— will add to their protection. + South Ditch reconstructed for flood control—could result in adverse affect to historic fabric. Mitigation--recording reduces impact to no adverse effect.

TABLE 4—COMPARISON OF ENVIRONMENTAL IMPACTS

Cultural Landscape and Historic Resources (cont.)	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
	<p>+ No physical impacts to known ethnographic resources are anticipated.</p>	<ul style="list-style-type: none"> + Some structures modified for fire protection. + Use of buildings/structures contribute to their long-term preservation. + Remodeling quarters complex results in increased operational efficiency/better employee morale. + Changes will be compatible with historic function/consistent with the preservation of historic fabric. <p>+ No physical impacts to known ethnographic resources are anticipated.</p>	<ul style="list-style-type: none"> + Some structures modified for fire protection. + Use of buildings/structures contribute to their long-term preservation. + Remodeling quarters complex results in increased operational efficiency/better employee morale. + Changes will be compatible with historic function/consistent with the preservation of historic fabric. + Remodeling of administrative facilities results in increased operational efficiency. + Partial restoration and refurbishing of post hospital enhances visitor experience. + With phase II implementation, removal of maintenance building, employee complexes, and the curatorial Bally building from the historic scene would provide uses more historically compatible/improve viewing from the highway. + With phase II implementation, administrative offices outside park/reallocation of space to historic functions helps reduce presence of nonhistoric functions/features in historic structures. + No physical impacts to known ethnographic resources are anticipated. 	<ul style="list-style-type: none"> + Some structures modified for fire protection. + Use of buildings/structures contribute to their long-term preservation. + Partial restoration and refurbishing of post hospital enhances visitor experience. + Removal of maintenance building, employee complexes, and the curatorial Bally building from the historic scene would provide uses more historically compatible/improve viewing from the highway. + Administrative offices outside park/reallocation of space to historic functions helps reduce presence of nonhistoric functions/features in historic structures. + No physical impacts to known ethnographic resources are anticipated.

TABLE 4—COMPARISON OF ENVIRONMENTAL IMPACTS

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Soils/Vegetation	<p>+ Existing measures to minimize impact to soils and vegetation by activities continue.</p>	<p>+ Minor soil/vegetation alterations + potential—soil compaction/soil erosion/loss of soil permeability/changes in soil chemistry/loss in soil insulation.</p> <p>+ Most common impact on soil—compaction.</p> <p>+ Trampling gradually diminishes vegetation/increases soil exposure to wind, rain, and hail.</p> <p>+ Site preparation—soil addition/removal/destruction of soil structure.</p> <p>+ Foot traffic in and around the parade ground would affect vegetation and soils.</p> <p><u>Mitigation—</u> Educational/interpretive programming teaching visitors the importance of staying on trails.</p> <p>Activities geared toward minimum impact.</p> <p>+Modifications to soil and topography to reduce soil compaction around heavily used facilities.</p> <p>+ Short term—temporarily rapid erosion.</p> <p>+Long term—soil protected and preserved.</p> <p>+Designed and landscaped areas consistent with the Cultural Landscape Report (CLR).</p> <p>+Topsoil replacement, when needed.</p> <p>+Monitoring to mitigate impacts.</p> <p>+ <u>Conclusion</u>—no significant immediate or cumulative impact to soils/vegetation.</p>	<p>+ Minor soil/vegetation alterations + potential—soil compaction/soil erosion/loss of soil permeability/changes in soil chemistry/loss in soil insulation.</p> <p>+ Most common impact on soil—compaction.</p> <p>+ Trampling gradually diminishes vegetation/increases soil exposure to wind, rain, and hail.</p> <p>+ Site preparation—soil addition/removal/destruction of soil structure.</p> <p>+ Foot traffic in and around the parade ground would affect vegetation and soils.</p> <p><u>Mitigation—</u> Educational/interpretive programming teaching visitors the importance of staying on trails.</p> <p>Activities geared toward minimum impact.</p> <p>+Modifications to soil and topography to reduce soil compaction around heavily used facilities.</p> <p>+ Short term—temporarily rapid erosion.</p> <p>+Long term—soil protected and preserved.</p> <p>+Designed and landscaped areas consistent with the Cultural Landscape Report (CLR).</p> <p>+Topsoil replacement, when needed.</p> <p>+Monitoring to mitigate impacts.</p> <p>+ <u>Conclusion</u>—no significant immediate or cumulative impact to soils/vegetation.</p>	<p>+ Minor soil/vegetation alterations + potential—soil compaction/soil erosion/loss of soil permeability/changes in soil chemistry/loss in soil insulation.</p> <p>+ Most common impact on soil—compaction.</p> <p>+ Trampling gradually diminishes vegetation/increases soil exposure to wind, rain, and hail.</p> <p>+ Site preparation—soil addition/removal/destruction of soil structure.</p> <p>+ Foot traffic in and around the parade ground would affect vegetation and soils.</p> <p><u>Mitigation—</u> Educational/interpretive programming teaching visitors the importance of staying on trails.</p> <p>Activities geared toward minimum impact.</p> <p>+Modifications to soil and topography to reduce soil compaction around heavily used facilities.</p> <p>+ Short term—temporarily rapid erosion.</p> <p>+Long term—soil protected and preserved.</p> <p>+Designed and landscaped areas consistent with the Cultural Landscape Report (CLR).</p> <p>+Topsoil replacement, when needed.</p> <p>+Monitoring to mitigate impacts.</p> <p>+ <u>Conclusion</u>—no significant immediate or cumulative impact to soils/vegetation.</p>

TABLE 4—COMPARISON OF ENVIRONMENTAL IMPACTS

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Wetlands, Floodplains, and Water Resources	+ Wetlands—periodically disrupted by flooding events (a normal condition).	+ Wetlands—portions of flood flows intercepted by a rehabilitated North Ditch.	+ Wetlands—portions of flood flows intercepted by a rehabilitated North Ditch and South Channel dike system.	+ Wetlands—portions of flood flows intercepted by a rehabilitated south ditch.
		+Created wetlands maintained in function—periodically disrupted for maintenance.	+ Created wetlands maintained in function—periodically disrupted for maintenance.	+ Function of the wetlands associated with the South Channel would be largely preserved.
		+Minor disruption to the created wetlands during the rehabilitation of the North Ditch.	+Minor disruption to the created wetlands during the rehabilitation.	+ Some disturbance during minor rehabilitation of channel.
				+ Some disruption during periodic maintenance after flooding events.
		+South wetland channel ephemeral stream—periodically disrupted by flooding events--functioning naturally in all storm flow events.	+South wetland channel ephemeral stream—periodically disrupted by flooding events--functioning naturally in all storm flow events.	+South wetland channel ephemeral stream—periodically disrupted by flooding events--functioning naturally in all storm flow events.
	+ Created wetlands continue to become drier.	+ Created South Channel dike wetland system becomes drier.		+ Created north and South Channel dike wetland system becomes drier.
	+ Floodplain/flash floods—insufficient safeguards from flash flooding.	+ Floodplain/flash floods—minor protective improvements for flooding—optimize flow in North Ditch.	+ Floodplain/flash floods—minor protective improvements for flooding—optimize flow in North Ditch and South Channel system.	+ Floodplain/flash floods—both the North Ditch and the South Channel dike system blocked to exclude diversions of South Channel flows, but allowed to remain as historic elements of the landscape.
		+Low to moderate flows conveyed around the fort grounds—but large magnitude runoff events, such as the 100-year flood or greater, will likely exceed the capacity of the existing system.	+Low to moderate flows would be conveyed around the fort grounds—but large magnitude runoff events, such as the 100-year flood or greater, will likely exceed the capacity of the existing system.	+ Somewhat more frequent instance of overbank flows for South Channel.
	+ Buildings closest to South Channel most threatened by flash flooding.	+ Buildings closest to the South Channel most threatened by flooding of the 100-year or greater magnitude frequency.	+ Buildings closest to the South Channel most threatened by flooding of the 100-year or greater magnitude frequency.	+Buildings closest to the South Channel most threatened by flooding of the 100-year or greater magnitude frequency.
	+Dysfunctional North Ditch and South Channel dike system provides no protection from flooding.	+ All structures, some building contents, park staff, and visitors would continue to be threatened by flash flooding.	+All structures, some building contents, park staff, and visitors would continue to be threatened by flash flooding.	+ Disturbs least new or existing landscape while providing some flooding protection.

TABLE 4—COMPARISON OF ENVIRONMENTAL IMPACTS

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Wetlands, Floodplains, and Water Resources (cont.)		<ul style="list-style-type: none"> + Maximum Estimated Flood could produce dangerous conditions. + Some reduced flood flow in the South Channel. + Historic flood flow patterns established 100+ years ago preserved. + Ditch would require initial rehabilitation and periodic maintenance. + Increased risk of greater periodic flood damage to structures below the North Ditch when the ditch is overwhelmed in a heavy flood event. 	<ul style="list-style-type: none"> + Maximum Estimated Flood could produce dangerous conditions. + Some reduced flood flow in the South Channel. + Historic flood flow patterns established 100+ years ago preserved. + Ditch would require initial rehabilitation and periodic maintenance. + Greatest flood protection of any of the alternatives at low to moderate flows—increased risk of greater periodic flood damage to structures below North Ditch and South Channel dikes when overwhelmed in a heavy flood event. 	<ul style="list-style-type: none"> + During low to moderate flood flows—minor increase in flow along the South Channel affecting culverts, channels, and residential areas outside of the park boundary. + Maximum Estimated Flood could produce dangerous conditions. + Require some hydraulic analysis/possible permitting by the U.S. Army Corps of Engineers (Section 404, Clean Water Act).
Wildlife and Threatened and Endangered Species	<ul style="list-style-type: none"> + Locations/seasons structured to minimize any effect on wildlife. + No wildlife habitat lost. + No effect on birds/wildlife. 	<ul style="list-style-type: none"> + Locations/seasons structured to minimize any effect on wildlife. + No wildlife habitat lost. + No effect on birds/wildlife. + <u>Conclusion</u>—no significant immediate or cumulative impact on wildlife or threatened and endangered species. 	<ul style="list-style-type: none"> + Locations/seasons structured to minimize any effect on wildlife. + No wildlife habitat lost. + No effect on birds/wildlife. + <u>Conclusion</u>—no significant immediate or cumulative impact on wildlife or threatened and endangered species. 	<ul style="list-style-type: none"> + Locations/seasons structured to minimize any effect on wildlife. + No wildlife habitat lost. + No effect on birds/wildlife. + <u>Conclusion</u>—no significant immediate or cumulative impact on wildlife or threatened and endangered species.
Air Quality	<ul style="list-style-type: none"> + Existing pollution from automobiles, traffic, dust continues. 	<ul style="list-style-type: none"> + Air quality monitored—corrective actions taken to maintain Class II Airshed. + <u>Conclusion</u>—no significant immediate or cumulative impact to the air and visual quality. 	<ul style="list-style-type: none"> + Air quality monitored—corrective actions taken to maintain Class II Airshed. + <u>Conclusion</u>—no significant immediate or cumulative impact to the air and visual quality. 	<ul style="list-style-type: none"> + Air quality monitored—corrective actions taken to maintain Class II Airshed. + <u>Conclusion</u>—no significant immediate or cumulative impact to the air and visual quality.
Noise	<ul style="list-style-type: none"> + Noise will continue to be managed. 	<ul style="list-style-type: none"> + Potential for slight decrease in negative noise through managing parking area congestion. + <u>Conclusion</u>—no significant immediate or cumulative noise impact affecting visitor experience of the park. 	<ul style="list-style-type: none"> + Potential for slight decrease in negative noise through managing parking area congestion. + <u>Conclusion</u>—no significant immediate or cumulative noise impact affecting visitor experience of the park. 	<ul style="list-style-type: none"> + Potential for slight increase in noise in certain developed areas by providing additional parking. + Further environmental review and analysis needed prior to site design. + <u>Conclusion</u>—no significant immediate or cumulative noise impact affecting visitor experience of the park.

TABLE 4—COMPARISON OF ENVIRONMENTAL IMPACTS

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Economic Contributions to Communities	<ul style="list-style-type: none"> + Continues to provide income to local economy. + Total combined sales from park operating expenditures—about \$2.8 million annually. + Total increased tax revenue being gained from park-related activities is about \$.23 million annually. + Operations and use of the park results in about 85 jobs for the local community. 	<ul style="list-style-type: none"> + Increases to local economy above Alternative A—estimate effect of future possible actions. + Short-term—expenditure of about \$348,000 for projects. + One-time benefit of \$.53 million in total combined sales, \$44,000 in tax revenue, 16 jobs for the life of the projects. 	<ul style="list-style-type: none"> + Increases to local economy above Alternative A—estimate effect of future possible actions. + Short-term—expenditure of about \$778,500 for projects. <i>Phase II</i>: expenditure of about \$1.4 million for projects. + One-time benefit of \$1.2 million in total combined sales, \$102,000 in tax revenue, 37 jobs for the life of the projects. <i>Phase II</i>: one-time benefit of \$2.4 million in total combined sales, \$208,000 in tax revenue, 75 jobs for the life of the projects. + Long term—increases in the operational budget of \$106,000. <i>Phase II</i>: increases in the operational budget of an additional \$66,000. + Annual benefit of \$169,000 in total combined sales, \$14,000 in tax revenue, 5 jobs. <i>Phase II</i>: additional annual benefit of \$106,000 in total combined sales, \$9,000 in tax revenue, 3 jobs. 	<ul style="list-style-type: none"> + Increases to local economy above Alternative A—estimate effect of future possible actions. + Short-term—expenditure of about \$2.4 million for projects. + One-time benefit of \$3.7 million in total combined sales, \$312,000 in tax revenue, 114 jobs for the life of the projects + Long term—increases in the operational budget of \$172,000. + Annual benefit of \$275,000 in total combined sales, \$23,000 in tax revenue, 8 jobs.
	<p>+ <u>Conclusion</u>—does not significantly impact the socio-economics of the area.</p>	<p>+ <u>Conclusion</u>—minor beneficial increase to the socioeconomics of the area.</p>	<p>+ <u>Conclusion</u>—beneficial increase to the socioeconomics of the area, depending on phased implementation. Upon phase II, there would be an additional minor beneficial increase to the socioeconomics of the area.</p>	<p>+ <u>Conclusion</u>—beneficial increase to the socioeconomics of the area.</p>
Adjacent Landowners	<ul style="list-style-type: none"> + Current management continues. 	<ul style="list-style-type: none"> + Continue to encourage adjacent landowners to use their land in ways that complement park values. 	<ul style="list-style-type: none"> + Continue to encourage adjacent landowners to use their land in ways that complement park values. + <u>Phase II</u>: increased connection to community associated with the relocation of administrative offices outside park. 	<ul style="list-style-type: none"> + Continue to encourage adjacent landowners to use their land in ways that complement park values. + Increased connection to community associated with the relocation of administrative offices outside park.

TABLE 4—COMPARISON OF ENVIRONMENTAL IMPACTS

	Alt. A—No Action	Alt. B	Alt. C—NPS Proposal	Alt. D
Facilities/Operational Efficiencies	<ul style="list-style-type: none"> + Continuation of the current situation. + Visitor center too small to meet increasing visitation. + Space not available to conduct environmental education programs. + Existing water distribution system inadequate to meet fire protection needs. + Buildings do not meet National Electric Code Standards (NEC). + Maintenance facility does not meet OSHA or CFR standards. + Water system/equipment inadequate to meet fire protection needs. 	<ul style="list-style-type: none"> + Slight increase with an improved water system/equipment to meet fire protection needs. + Increased space for orientation/environmental education. + Greater use of personal services/outreach education to serve visitors. + Improvements in electrical to meet NEC standards. + Maintenance bldg. brought up to maintenance standards. + Improved water system/equipment to meet fire protection needs. 	<ul style="list-style-type: none"> + Slight increase with an improved water system/equipment to meet fire protection needs. + Increased space for orientation/environmental education. + Greater use of personal services/outreach education to serve visitors. + Improvements in electrical to meet NEC standards. + Maintenance bldg. brought up to maintenance standards. + Improved water system/equipment to meet fire protection needs. + <u>Phase II:</u> Relocation/elimination of maintenance, employee, Bally bldg., and employee quarters improve views into the park from State Highways 17 and 118. + <u>Phase II:</u> Adequate storage facilities to safeguard equipment, supplies, materials, and museum collections. + <u>Phase II:</u> Visitors more adequately served with facilities large enough to meet needs. 	<ul style="list-style-type: none"> + New facility outside the existing boundary—consolidation of admin. functions. + Considerable savings in human/fiscal resources. + Historic structures used more appropriately. + Improvements in electrical to meet NEC standards. + Improved water system/equipment to meet fire protection needs. + Relocation/elimination of maintenance, employee, Bally bldg., and employee quarters improve views into the park from State Highways 17 and 118. + Adequate storage facilities to safeguard equipment, supplies, materials, and museum collections. + Visitors more adequately served with facilities large enough to meet needs.

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

The alternatives in this plan encompass allocation of resources consistent with the park's purpose and significance and also might include future actions in the park by nongovernment entities. **Only those areas of the park that could be affected are described. Future site-specific proposals after approval of this plan may require further surveys and environmental compliance.**

All action alternatives meet the desired future conditions described in the first chapter in different ways. Management prescriptions are applied to different areas of the park based upon the general emphasis of the alternative.

Effects are documented in general terms in this section and are related to the descriptions of the resources described in previous sections. Impact topics have been selected on the basis of the significance of the adverse effects or potential benefit to resources. Items that would not be impacted under any of the alternatives are not discussed. Impacts may be direct, indirect, or cumulative.

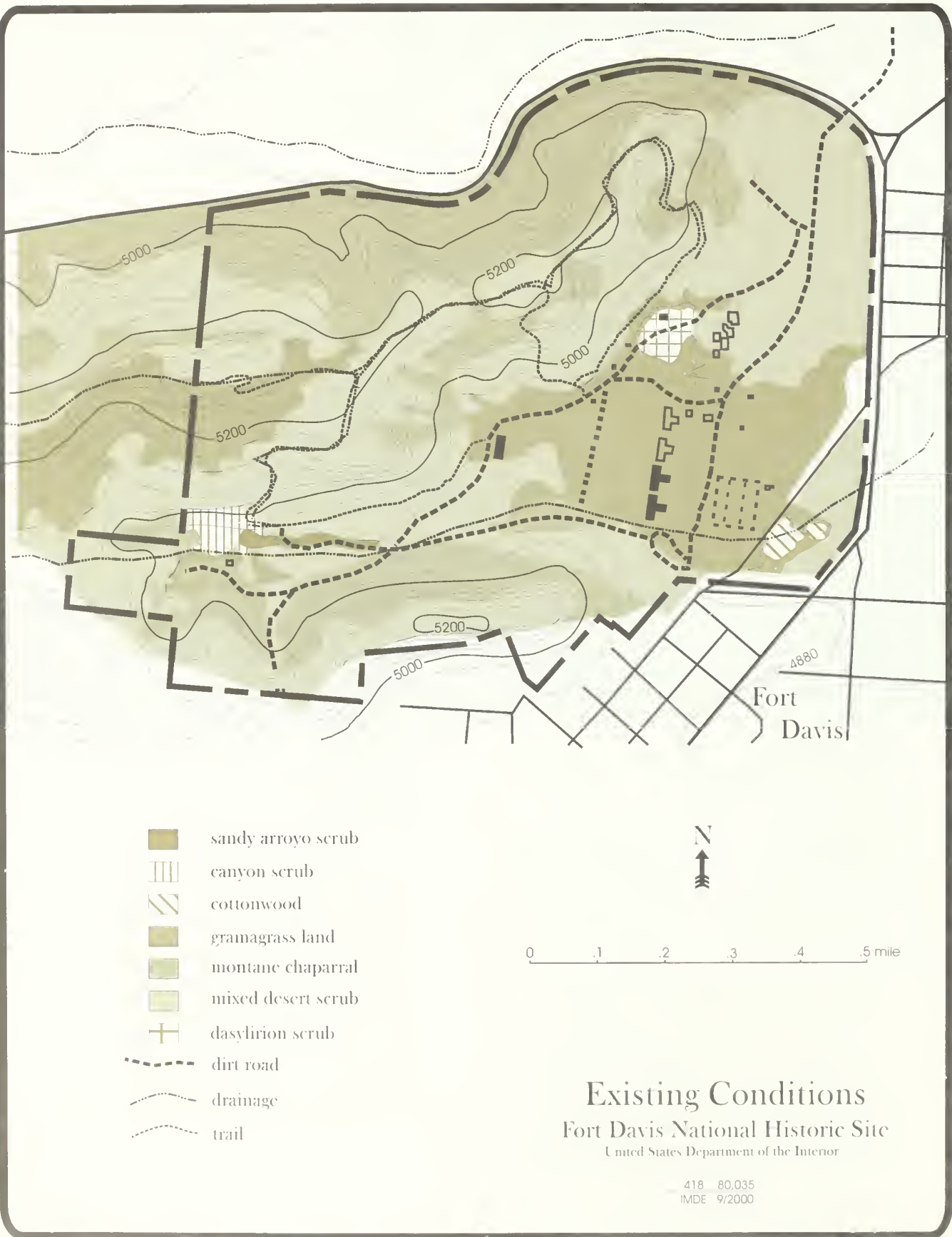
Direct effects are caused by a specific action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later in time or farther removed from the place, but are still reasonably foreseeable. Cumulative effects are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor or collectively significant actions taking place over a period of time.

EXISTING CONDITIONS

Fort Davis NHS encompasses the buildings, ruins, foundations, and cultural landscape of two frontier military posts active from 1854–1862 and 1867–1891. The forts were built in and around the mouth of a natural box canyon. Today, Fort Davis NHS consists of 473.87 acres, having a blend of natural and cultural resources.

The elevation of Fort Davis NHS is 4,880 feet, slightly under one mile, with the surrounding hills rising to approximately 340 feet, bringing the maximum elevation to 5220 feet. Limpia Creek, which was a vital water source for the fort, flows eastward and northward along the site's north boundary. Boundaries on the south side consist of Sleeping Lion Mountain and on the north, of an irregular parcel of land bordered by State Highway 118. The Davis Mountains State Park defines the site's western boundary; and State Highway 17 creates its eastern boundary. Adjacent to the fort is the town of Fort Davis, a small, unincorporated town of approximately 1,200 people. There is no zoning to govern the appearance or uses of the town.

The summer months are dry and hot, with afternoon showers frequently occurring during July and August. Winters tend to be mild with very little snowfall. The mean daily minimum temperature averages 37 degrees in winter, and the mean daily maximum temperature is 88 degrees in summer. Average yearly precipitation is 13–15 inches, with July usually being the wettest month. Humidity generally tends to be very low.



Historical extremes in rainfall occurred in 1871, when only 6.78 inches of rain fell, and in 1881, when the rainfall totaled 27.54 inches. Flooding from extreme weather conditions has occurred frequently.

VISITOR EXPERIENCE

Affected Environment

Visitation patterns have remained fairly stable. Generally, the park attendance averages 60,000–70,000 people per year. The 10-year total for calendar years 1990 through 1999 is 653,369. The average time spent at the park by visitors is 1.8 hours. The shortest visits tend to be in December and January when colder temperatures limit walking around the site.

Peak visitation usually occurs during March when many schools are not in session because of spring break. The majority of visitors to Fort Davis NHS are from Texas. Most of the fort's European visitors come from Germany, while the majority of Asian visitors are from Japan. Visitors to the fort could experience crowding, generally on weekends, holidays, and busy periods during the spring.

Entry to the fort area brings visitors in contact with the visual beauty of Fort Davis. The mood created by military sounds and sights enhances awareness of the fort's historic past. Visitors have an opportunity to experience the site on their own or through organized interpretive programs.

The current level of development strikes a balance between ruins and restored historic buildings—a balance that provides visitors with both a story and a provocative introduction to a significant part of America's frontier history.

Impacts of the No-Action Alternative—Alternative A

There would be no change to visitor experience.

Impacts of Alternative B

This alternative is the same as Alternative C, but with less emphasis on expanded programs.

Impacts of Alternative C—NPS Proposal

Visitor experience would be enhanced by the proposal, because it focuses on improving visitor services and access to information via outreach and park programs.

Visitor flow and use patterns will not change. Access routes permit walking tours through the fort and its historic resources in a logical, topic-oriented manner, with initial orientation provided at the visitor center.

Improvements in parking will increase capacity within certain limits. If visitation remains below 125,000 recreation visits per year, it is estimated that visitors can be accommodated in a relatively uncrowded environment. Because the park has a small parking area, larger vehicles such as tour buses and touring vans or motor homes are not accommodated easily. A transportation study is proposed should visitation exceed 125,000. The study would evaluate alternative means of accessing the fort in order to maintain a quality visitor experience and minimize the impact of larger vehicles on the historic scene.

Access to the park will continue to be essentially via private vehicle. The historic area is easily accessible by foot from the town of Fort Davis. Modifications may be necessary in the future to access interior park paths and trails, to improve circulation, and to orient visitors to other park resources, such as historic roads. This

would be done in a manner consistent with the management prescriptions. The close relationship to the town makes this a practical solution to overcrowding, but solutions need to be adequately evaluated in the transportation study.

No overnight accommodations would be permitted. Visitation will probably level off at about 75,000 per year. With improved programs, the visitor's length of stay at the fort is expected to increase. This increase could be as much as 3 hours, with an estimated average length of stay of about 2.0–2.2 hours. The quality of stay is also expected to improve through program enrichment.

Phase II impacts are documented in Alternative D.

Impacts of Alternative D

This alternative would improve visitor experience slightly more than Alternative C, because more emphasis would be placed on facility and space improvements to accommodate visitors and improve the historic scene. No overnight accommodations would be permitted.

ARCHEOLOGICAL RESOURCES

Affected Environment

Archeological Sites

Prehistory Overview—People first came to Texas about 12,000 years ago. These inhabitants banded together in small groups, moving from camp to camp in search of food, depending on availability of game and wild plants. Each group probably moved around in the same area year after year. The arid climate provided few trees for firewood or building. The region is classified as 'mountain and basin,' therefore, there were wide differences in the living patterns of the American Indians who inhabited the area.

During Archaic times (6,000 B.C. to A.D. 500) the food supply shifted toward plants and smaller game. The emphasis on plant foods necessitated the use of manos and metates, which are common to Archaic sites and have been found at Fort Davis NHS. The late Prehistoric Period (A.D. 500 to 1500) introduced new tools and ways of producing food, resulting in a greater use of pottery and arrow points.

With the arrival of the Spanish began the Historic Period. After A.D. 1500, new groups such as the Comanche and Apache began to traverse the Trans-Pecos and gradually replaced the native people now identified as "Jumanos."

As summed up by Robert M. Utley in his publication entitled Fort Davis National Historic Site, Texas:

"Few Indians actually lived in this country. Several bands of Mescalero Apaches had villages in the Davis Mountains and the Big Bend . . . many other Indians regularly passed through the Trans-Pecos."

The Mescalero Apaches, Kiowas, and Comanches all conducted raids over large distances in this vast area, which played a significant role in the establishment of the fort.

Resources—While there are several identified prehistoric archeological sites at Fort Davis NHS today, the prospect of having other isolated occurrences or remains is substantial. The identified sites, first documented in July 1986, are monitored on a regular basis. The connections of the earlier people, military occupation, and yet undiscovered sites all provide the potential for a rich archeological as well as historical resource.

Impacts of the No-Action Alternative—Alternative A

Periodic increased water flows may erode areas in the alluvial floodplain, thereby exposing and moving archeological

resources and making them more liable to theft.

Impacts of Action Alternatives (B, C, and D)

Reconstruction activities would not affect known archeological sites. While there should be little ground disturbance in areas of high archeological potential, buried historic remains are located throughout the park.

Known locations are well documented and surveyed. All ground-disturbing activity in these areas will be monitored to mitigate any impacts that might occur, should any archeological sites be encountered. Sites in close proximity to visitor-use areas are vulnerable to surface damage.

Prior to final site selection during project design or any land-modifying activity, an archeologist will inspect the proposed development site and its immediate vicinity for the presence of cultural remains, both prehistoric and historic. Should newly discovered or previously unrecorded cultural remains be found, additional investigations will be performed.

In summary, providing additional information and protection on archeological resources would be a positive benefit.

CULTURAL LANDSCAPES AND HISTORIC RESOURCES

Affected Environment

Cultural Landscapes—“Cultural landscape” can refer to a geographic area where people have been or still are, modifying, interacting with, and giving human meaning to the land. The National Park Service is primarily concerned with landscapes having historic and/or ethnographic significance in areas in

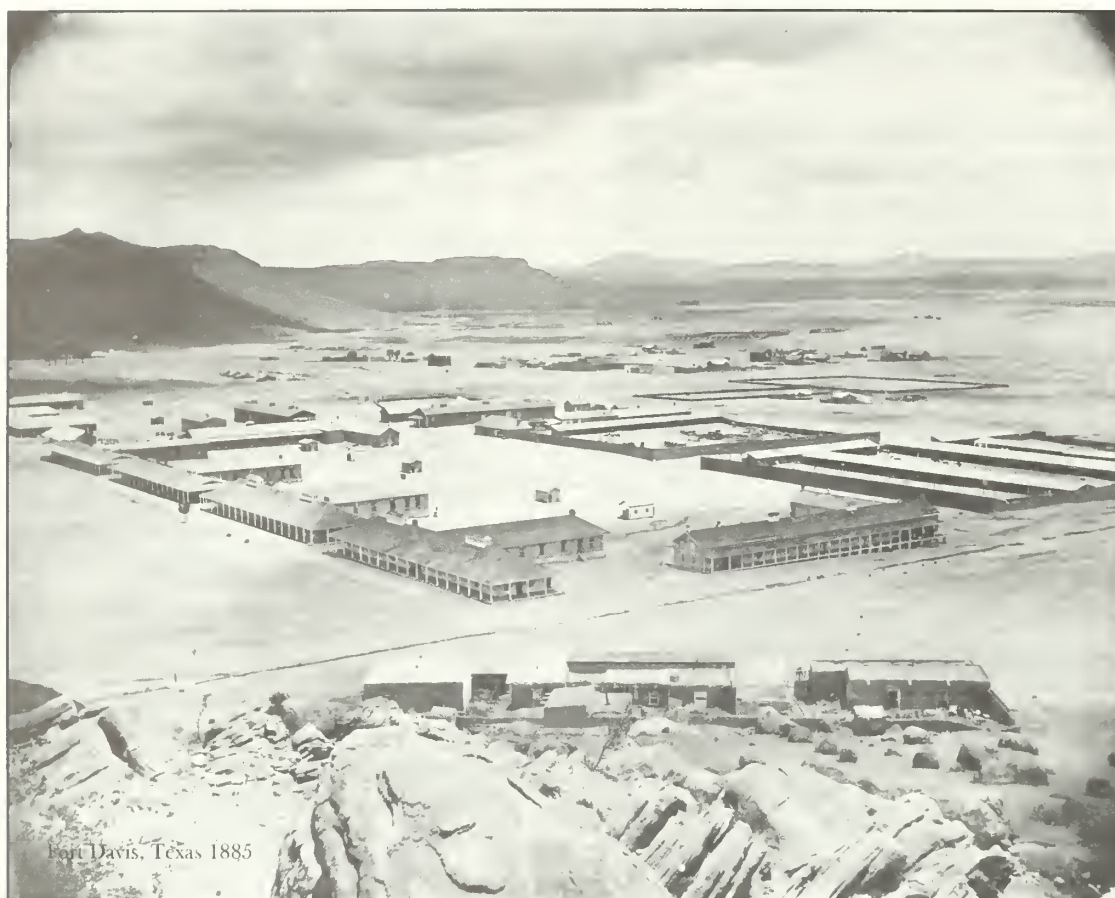
which the NPS has or plans to acquire legal interest. The landscape does not need to contain visible evidence of human manipulation to be considered a cultural landscape. The term can also describe a way of seeing, where all aspects of a place—natural and cultural—are considered together as part of an overall system.

The definitions, policies, and procedures of the NPS Cultural Landscapes Program are based on the National Register of Historic Places. A major part of the national heritage, which the National Park Service is charged to protect and interpret, has been and is lived out in the landscape. Farm fields and irrigation systems, plazas and courtyards, designed parks and gardens, and river valleys, mesas, plains, and mountains where groups of people have gathered food, held ceremonies, or fought each other over political beliefs, are all examples of cultural landscape resources.

Characteristics of cultural landscapes can include tangible and intangible elements. Tangible evidence onsite can relate to a number of types of land use, including settlement, aesthetics, travel, subsistence, agriculture, recreation, industry, ceremony, and celebration.

In addition to being a distinct resource along with archeological sites, historic structures, ethnographic resources, and museum objects, cultural landscapes can be thought of as the holistic context for the individual cultural features, the organizing system within which specific cultural resource elements (e.g., plants, animals, structures) are located.

Retaining the present cultural landscape of Fort Davis serves to enrich the visitor’s experience. The box canyon, the military installation, the rugged landscape are all historic and unique features of this area. They are features that visitors for decades have traditionally associated with the fort.



Although a cultural landscape inventory (CLI) has not yet been completed for Fort Davis NHS, a potentially significant cultural landscape associated with several historic periods and events is clearly present, and a CLI is needed to document and analyze all the features of the historic landscape at the site. The structural and biotic evidences of activities associated with the first and second forts are included within this cultural landscape. The CLI would identify contributing characteristics of the landscape, including patterns of spatial organization, natural systems and features, circulation patterns, all underground and aboveground structural remains, and all vegetative patterns and features characteristic of the significant historic periods.

The CLI will also include a statement of significance and an overall integrity

rating. The completed CLI will address NHPA Section 110 compliance as required by NPS policy to provide baseline resource data. It will also provide park management with information needed for informed preservation and management of cultural landscape resources. The CLI is scheduled to begin in the summer of 2000, and, until it is completed, all landscape features, such as historic roads, garden sites, and the cemetery, and open areas, such as the parade ground, should be preserved.

Historic Structures—After gold was discovered in California in 1848, westward overland travel routes became important. In west Texas, the San Antonio–El Paso Road passed through territory used by the Apache and Comanche. To protect travelers and the mail from their encounters with Apache and Comanche tribes, the army built a

fort in 1854, in what were then called the Apache Mountains, near Limpia Creek. The new post was named Fort Davis, after then Secretary of War Jefferson Davis, and soon the mountains became known as the Davis Mountains.

With the secession of Texas from the Union in 1861, Fort Davis was abandoned. The post was then occupied by Confederate troops. In the summer of 1862, southern forces left and the post was deserted for the remainder of the Civil War. A second Fort Davis, constructed in 1867, prevailed until 1891.

Troops from both forts scouted and mapped the surrounding territory, escorted the mail, protected stagecoaches and wagon trains, guarded railroad surveyors, and fought against raiding Apache and Comanche bands. Most notable among the troops who served at Fort Davis were African Americans (known as Buffalo Soldiers) of the 9th and 10th U.S. Cavalry and 24th and 25th U.S. Infantry regiments. These units compiled a notable record of military accomplishment and helped to bring about the peaceful settlement and development of the region.

The structures of the first Fort Davis, numbering about 60, were primarily constructed of pine slabs. Today all that remain of these buildings are the foundations. The post–Civil War fort consists of adobe and cut stone buildings. About 25 significant structures from this fort have been restored and five of these are furnished to the time period of the 1880s. There are also several ruins and foundations of second fort structures as well as a ditch system used by the army for flood control (see discussion under Floodplains, Wetlands, and Water Resources). Currently 110 first and second fort structures are on the List of Classified Structures.

Collections—The museum collection at Fort Davis consists of an estimated 80,000 artifacts, which range from antique furnishings, museum exhibit artifacts, extensive archeological and field collection groups, and two herbariums. About 5,000 items are on public exhibit in the museum and in five furnished buildings. The remaining items are stored in three curatorial facilities. Items in the museum collection are used in permanent and temporary exhibits, for research and study, and for occasional loan.

In a sense, the entire park is an “outdoor museum.” Viewed in this context, it is therefore critical to maintain the historical appearance and integrity of the fort.

Impacts of the No-Action Alternative—Alternative A

Cultural Landscapes—The historic vernacular-designed landscape would continue to be managed as a historic landscape resource, and any modifications would be made so as not to reduce its integrity. Maintaining the integrity of landscape areas and features would result in no adverse effect on this landscape. Pending the completion of a cultural landscape report, all contributing or potentially contributing landscape elements will be preserved resulting in no adverse effect.

Historic and Scenic Vistas from Within and Outside Park Boundaries—No changes would be made to any element in the landscape within the park.

Historic Structures—Buildings and facilities open to the public would not be improved. Some would remain inaccessible to mobility-impaired visitors.

Collections—Space is inadequate for storage and display.

Impacts of Alternative B

Cultural Landscapes—The historic vernacular-designed landscape would

continue to be managed as a historic landscape resource, and any modifications would be made so as not to reduce the integrity of these areas. Maintaining the integrity of landscape areas and features would result in no adverse effect on this landscape. Pending the completion of a cultural landscape report, all contributing or potentially contributing landscape elements will be preserved, resulting in no adverse effect.

The preservation of visual quality within the park and working with adjacent landowners to minimize modern intrusions on park viewsheds would benefit the experience of those visiting and hiking. This would retain the less-developed, more historic views within the park.

Historic and Scenic Vistas from Within and Outside Park Boundaries—No changes would be made to any element in the landscape within the park.

Historic Structures—Improvements would be made to make the post hospital accessible to mobility-impaired visitors. This would require some modification to existing entryways, but would enable people with mobility impairments to experience the interior of an additional fort building.

The North Ditch would be reconstructed for flood control purposes. This could result in an adverse effect to the historic resources. Proper mitigation and recording should reduce this impact to a no adverse effect. Some structures would be modified to meet fire protection standards.

Use of buildings and structures to support park operations, interpretation, and visitor use would contribute to their long-term preservation. Remodeling staff quarters to increase office space would result in increased operational efficiency and better employee morale. Changes would be compatible with historic function and

consistent with the preservation of historic fabric.

No physical impacts to known ethnographic resources are anticipated.

Collections—A minor beneficial improvement would be made to correct deficiencies.

Impacts of the Proposal—Alternative C

Cultural Landscapes—The historic vernacular-designed landscape would continue to be managed as a historic landscape resource, and any modifications would be made so as not to reduce the integrity of these areas. Minor changes in the parking configuration to increase capacity would be carefully done to maintain the integrity of landscape areas and features. This would result in no adverse effect on this landscape. Pending the completion of a cultural landscape report, all contributing or potentially contributing landscape elements will be preserved, resulting in no adverse effect.

The preservation of visual quality within the park and working with adjacent landowners to minimize modern intrusions on park viewsheds would benefit the experience of those visiting and hiking. This would retain the less-developed, more historic views within the park.

Phase II impacts are documented in Alternative D.

Historic and Scenic Vistas from Within and Outside Park Boundaries—No changes would be made to any element in the landscape within the park during Phase I.

Phase II impacts are documented in Alternative D.

Historic Structures—Improvements would be made to make the post hospital

and other historic buildings accessible to mobility-impaired visitors. This would require some modification to existing entryways but would enable people with mobility impairments to experience the interior of additional fort buildings. The partial restoration and refurnishing of the post hospital would enhance visitor experience by providing new opportunities for viewing historic resources. The installation of fire suppression equipment would not adversely affect historic resources, but would add to their protection.

The North Ditch and South Ditch would be reconstructed for flood control purposes. This could result in an adverse effect to the historic resources. Proper mitigation and recording should reduce this impact to a no adverse effect.

Use of buildings and structures to support park operations, interpretation, and visitor use will contribute to their long-term preservation. Remodeling staff quarters to increase office space will result in increased operational efficiency and better employee morale. Changes will be compatible with historic function and consistent with the preservation of historic fabric.

No physical impacts to known ethnographic resources are anticipated.

Additional phase II impacts are documented in Alternative D.

Collections—Deficiencies would be corrected, and collection storage and displays would be improved.

Impacts of the Proposal—Alternative D

Cultural Landscapes—The historic vernacular-designed landscape would continue to be managed as a historic landscape resource, and any modifications would be made so as not to reduce the integrity of these areas.

Maintaining the integrity of landscape areas and features would result in no adverse effect on this landscape. Pending the completion of a cultural landscape report, all contributing or potentially contributing landscape elements will be preserved resulting in no adverse effect.

The preservation of visual quality within the park and working with adjacent landowners to minimize modern intrusions on park viewsheds would benefit the experience of those visiting and hiking. This would retain the less-developed, more historic views within the park.

Historic and Scenic Vistas from Within and Outside Park Boundaries—The relocation of the maintenance facility, employee housing, and curatorial Bally building to an area outside the park would improve the vistas and views of the fort from State Highways 17 and 118. This change would provide a more historically accurate and attractive approach to the fort without adversely impacting the historic structures or cultural landscape.

Historic Structures—Improvements would be made to make the post hospital and other historic buildings accessible to mobility-impaired visitors. This would require some modification to existing entryways but would enable people with mobility impairments to experience the interior of additional fort buildings. The partial restoration and refurnishing of the post hospital would enhance visitor experience by providing new opportunities for viewing historic resources. The installation of fire suppression equipment would not adversely affect historic resources, but would add to their protection.

The South Ditch would be reconstructed for flood control purposes. This could result in an adverse effect to the historic fabric. Proper mitigation and recording

should reduce this impact to a no adverse effect.

Use of buildings and structures to support park operations, interpretation, and visitor use will contribute to their long-term preservation. Removal of maintenance building, employee complexes, and the curatorial Bally building from the historic scene would provide for uses that are more historically compatible inside the park boundary and improve viewing from the highways. Moving administrative offices outside the park and the reallocation of space to historic functions would help reduce the presence of nonhistoric functions and features in historic structures.

No physical impacts to known ethnographic resources are anticipated.

Collections—Deficiencies would be corrected, and there would be a major improvement to displays and storage for collections.



LONG-TERM HEALTH OF NATURAL ECOSYSTEMS

Affected Environment

Soils/Vegetation

Soil—In 1977, the Soil Conservation Service mapped four soil range sites at Fort Davis NHS. According to a 1981 report by Dr. James T. Nelson, former professor of Range Animal Science at Sul Ross State University, Alpine, Texas, entitled "The Historic Vegetative Aspect of Fort Davis National Historic Site, Texas," "Most of the fort is situated on a deep upland or loamy range site. This site is defined as having a flat to concave valley plane with a 0–3% slope. Soils are predominantly of the Musquiz association, over 20" deep with low erosion hazard and high water availability. Most of the hospital canyon floor lies in a draw range site. Soils here are deep well-drained non-calcareous loams of the Gageby association. The canyon is long and narrow with run-in water from adjacent steep slopes providing soil moisture and washing fine soil materials into the canyon floor.

At the foot of the canyon walls lies a narrow band of gravelly loam on gentle convex slopes of 1–5%. This zone is known as the gravelly range site and consists of about half-and-half Santo Tomas gravelly loam and Medley loam. Fine material is washed out of these soils into the flats below.

Most of the higher canyon walls and hilltops consist of 50–90% rock outcrop and 10–40% Brewster association soils. At the western edge of the site is a hill consisting of rock outcrops, Mainstay and Livingston soils. These areas are known as igneous mountain range sites. The soils range from very shallow to deep (pockets) and are gravelly to cobbly in texture."

Vegetation—Because of the variable topography, a striking blend of desert, mountain, and grassland formations has created “a rich floral diversity” evident at the fort. Historically there was more grassland compared to the large amount of catclaw and mesquite visible today. In his study, Dr. Nelson noted the dramatic difference between the photographs he took in 1980 and 1981 and historic photos taken in the 1880s. Today the dominant plant community areas are grama grass, mixed desert, sotol scrub, and montane/chapparal, with more recent additions of canyon scrub and sandy arroyo.

An historic grove of native Rio Grande cottonwoods (Populus wislizenii), estimated to be approximately 120 years old, provides an attractive setting for visitors entering the park. Other tree growth consists of mixed stands of gray oak (Quercus grisea), Emory oak (Quercus emoryi), and alligator and red-berry juniper (Juniperus deppeana and pinchot). According to Dr. Nelson, common shrubs include three forms of sumac, evergreen, littleleaf, and skunkbush (Rhus virens, R. microphylla), and R. aromatica), Texas mountain laurel (Sophora secundiflora), catclaw (Mimosa biuncifera and Acacia ssp.), Mormon tea (Ephedra trifurca), honey mesquite (Prosopis glandulos), and algerita (Berberis trifoliata). Two half-shrubs, threadleaf groundsel (Senecio longilobus) and Broom snakeweed (Xanthocephalum sarothrae), are present, scattered or in dense patches on the property. Sotol (Dasyliirion wheeleri) can be found on rocky slopes, and on hilly area the presence of beargrass (Nolina erumpens) has been detected. Prickly pear cactus (Opuntia spp.) is found in its many varieties on most of the grounds.

The most common grasses are blue grama (Bouteloua gracilis), sideoats (B. curtipendula), black (B. eriopoda), hairy

(B. hirsute), and sprucetop (B. chondrosoides).

Tall grasses, such as cane bluestem (Bothriochloa barbinodis), little bluestem (Schizachyrium scoparium), bull muhly (Mulhenbhergia emerslyi), dropseed (Sporobolus cryptandrus), and tanglehead (heteropogon contorta), are found on well-drained sites throughout the area.

Two major herbarium groups, totaling approximately 580 specimens, collected in the 1970s and 1990s, are located in the museum collection’s main storage area.

There are no known plants classified as “protected” or endangered species in the park. Some exotic grasses and plants do exist in the park, but they are not considered a threat to the ecosystem.

Of primary importance is the scenic value of vegetation, giving a unique sense of openness and panoramic vistas of the fort. This setting, composed of mountain and desert plant life, is the distinctive feature of the fort.

Impact of the No-Action Alternative

Existing measures to minimize the impact to soils and vegetation by human activities would continue.

Impacts of the Action Alternatives (B, C, D)

Under the action alternatives, minor soil and vegetation alterations would be allowed in conjunction with proposed changes to various facilities throughout the park. Additional environmental review and analysis will be done once the scope and areas of these changes are determined. Future actions requiring additional site-specific environmental analysis would most certainly consider impacts on soils. These can be described as follows:

Impacts of any new visitor traffic to soil can be directly and indirectly caused by continual and increased use of the resource. Potential impacts that could occur from visitor use include soil compaction, soil erosion, loss of soil permeability, changes in soil chemistry, and loss in soil insulation. Areas that have the most recovery potential from impacts of development are located within areas previously described.

On trails or where visitor use is concentrated, the most common impact on soil would be compaction, which lowers soil permeability, changes the local soil moisture, and decreases water storage capability. As a result, water transmission within soils would decrease and surface runoff and soil erosion would increase.

Unauthorized expansion of trail areas on the fringes of visitor uses most often leads to continual trampling that gradually diminishes vegetation and increases soil exposure to wind, rain, and hail.

Any future construction requires site preparation that would result in soil addition or removal and destruction of soil structure. Removal and displacement of topsoil would occur where pavement and buildings are located and utilities or other facilities are installed. Foot traffic in and around the parade ground would affect vegetation and soils.

Mitigation—Educational and interpretive programming teaching visitors the importance of staying on designated trails would mitigate further impacts to the soil. Engaging the visitor in a variety of recreational and educational activities geared toward minimum impact could be useful in the mitigation of impacts to soil.

Specific mitigation measures for future development projects would be defined during planning for each project and carried out prior to or during project development.

Mitigation of impacts may include modifications to soil and topography to reduce soil compaction around heavily used facilities. Flat and slightly sloping areas could erode, and channeling of the soil could take place. In the short term, soil in construction areas would temporarily undergo rapid erosion. In the long term, when drainage structures are in place and fully operable and vegetation restored, the soil would be protected and preserved. Carefully designed and landscaped areas consistent with the cultural landscape report (CLR) recommendations would assist in minimizing topsoil impacts. Topsoil replacement, when needed, should use material similar in composition (mineral and organic) to the original topsoil, and replanting should be done with native grasses and shrubs. Careful and continuous monitoring should be done to mitigate impacts.

Conclusion—None of the action alternatives considered would have any significant immediate or cumulative impact to the soils or vegetation of the park.

Wetlands, Floodplains, and Water Resources

Wetlands—Narrow wetland areas exist along the ephemeral “south channel” drainage stream. These wetland areas likely meet the classification criteria adopted by the NPS in Director’s Order #77-1 and Procedure Manual #77-1, which implement policies, requirements, and standards for Executive Order (E.O.) 11990: “Protection of Wetlands” (42 Fed. Reg. 26961). These seasonally wet areas

in Fort Davis NHS probably meet wetland criteria under the Cowardin classification methodology in the Riverine System, Intermittent Subsystem, with both rock (bedrock and rubble) and unconsolidated (various subclasses) bottoms (Cowardin et al., 1979).

Mapping of the wetland areas in the park has been performed on large-scale aerial maps through the U.S. Fish and Wildlife Service National Wetland Inventory Mapping project. A map entitled; National Wetlands Inventory, Fort Davis, Texas, was prepared at 1:24000 scale in 1994. This map indicates no wetlands on the Fort Davis site, although two less-than-one-acre diked impoundments (probably for holding stock water) are identified immediately upstream. The map is an indicator of wetland location, but requires an additional wetland survey.

Two other drainages, the North Ditch and the South Channel dike system, constructed by the army as interceptor dikes and ditches, function as wetlands when moderate to major flooding occurs. They are considered created or "intentional artificial" wetlands by the NPS and have minimal wetland habitat associated with them.

Floodplains/Flash Floods—Fort Davis NHS is located in the Davis Mountains of west Texas at an elevation of close to 5,000 feet (NGVD). The watershed above the park is approximately 0.6 square miles and is oblong, measuring less than 2 miles long by less than one-half mile wide. Intense thunderstorms, characteristic of this region, are capable of producing high-magnitude runoff events. Furthermore, given the small size of the watershed and the rapid runoff rate of the bedrock, the fort location is very likely within a flash flood zone.

Fort Davis was originally an army post established in 1854. The fort site is located on an alluvial fan directly below

the fan-head valley. The fort and surrounding grounds occupy approximately two-thirds of the upper alluvial fan. Distributary channels are visible on aerial photographs downstream (NE) of the fort, however, construction of the fort and its surrounding grounds likely obliterated all evidence of distributary channels in that area. The South Channel stream drainage is perhaps the only remnant channel, largely carrying all surface flow now through the fort.

Because of Fort Davis's setting on an alluvial fan, flooding is a regular phenomenon there. During the second fort period (1867–1891), the army constructed a series of ditches and dikes to alleviate flooding on the fort grounds. Low to moderate flows were, and continue to be, diverted around the fort grounds via two ditches, hereafter referred to as the North Ditch and the South Channel.

The existing configuration of ditches and dikes, however, is not sufficient to protect the fort grounds from frequent flooding, and current park staff have observed a number of large runoff events in recent years. Of particular note is an event that occurred in late summer 1990. In this event, the entire ditch-dike-channel system was overwhelmed by floodwaters and a large portion of the fort was flooded. The right bank of the North Ditch failed, and the lower South Channel dike system received water originally diverted from the primary channel (South Channel) into the North Ditch. Eventually, the lower dike also failed and debris-laden flood waters spilled onto the fort ground, eroding historic foundations and depositing sediment in historic structures. Backup floodwaters approached the three on-site staff residences. Additionally, flow overtopped the left bank of the South Channel, eroding the walking trails and flooding the headquarters building and the barracks. A subsequent site visit performed by Joe Bruno of the Southwest

Regional Office resulted in several recommendations, including reinforcing the dikes and improving the conveyance capacity of the ditches/channels (Bruno/NPS, 1990).

Hydrologic/Hydraulic Analyses—

Flood frequency information for Fort Davis was derived using equations published by the USGS (Schroeder and Massey, 1977). Calculated discharges ranged from about 100 cfs for the 2-year flood to about 650 cfs for the 100-year flood. The 500-year flood is estimated to be just under 1,000 cfs. The Maximum Estimated Flood (Q_{me}) for this watershed is projected to be about 6,000 cfs using the method presented in Crippen and Bue, 1977. This is nearly 10 times greater than the calculated 100-year discharge but is within the range of maximum flood estimates calculated in other studies conducted by the authors.

Ditch-Dike System—The hydraulic capacities of ditches in Fort Davis NHS, as outlined below, were estimated using the U.S. Army Corps of Engineers' computer model HEC-RAS.

The North Ditch intersects the South Channel, which is the first-order drainage, roughly midway between the hospital (a historic structure located on the upper end of the fan) and the upper fan-head valley. From that point, the North Ditch commences northeast, following the contour and passing due north and uphill of the primary fort grounds. Cut-and-fill excavation produced a channel roughly 10 feet wide with a 1- to 1.5-foot levee on the right bank. Hydraulic modeling results indicate that the ditch capacity is about 50 cfs. A discharge greater than this is likely to overtop the levee, probably washing it out in one or more locations. A flow in the South Channel in excess of 1.5 feet is needed to initiate flow into the North Ditch. A discharge of about 100 cfs, which is in the range of a 2-year recurrence interval flood, will produce

sufficient flow to access the North Ditch. Reportedly, the army used a check dam across the South Channel to encourage diversion of flows into the North Ditch on a more frequent basis; however, this feature is no longer present.

Below the diversion to the North Ditch, the South Channel drainage continues for several hundred feet before losing all channel characteristics owing to reduced grade. Downstream of where the South Channel flattens out, the army constructed two dikes (herein referred to as the South Channel dike system). Currently, the upper dike serves to divert sheet flow (including that conveyed from the South Channel) back to the South Channel. The lower dike primarily impounds overbank flow from the South Channel and some sheetflow from the upper fan. The upper dike runs roughly east-west and is approximately 3 feet high. The lower dike runs roughly north-south and also is about 3 feet high.

These two dikes nearly intersect at a point where the service road crosses the South Channel. This is also the diversion point where overbank flows access the area behind the lower dike, creating a flood detention pond. A discharge of about 100 to 200 cfs (2- to 5-year recurrence interval flood) will produce a sufficient stage to access the detention area. It is not apparent if the original design of the lower dike was for storage or redirection. The section where the road crosses the channel has likely been filled in, as there is a buried water main at the crossing. If the channel at this location was deeper at one time, then the lower dike may have been intended for diversion only.

The South Channel appears to have been one of the original alluvial fan channels. It has received concentrated flow, however, for more than a century. Either because of the underlying structure, the fan morphology, or the concentrated flows (most likely a combination of the three),

the South Channel has incised into bedrock. This channel is steep with a grade of about 3–4 percent. Most of the reduction in elevation is accomplished through two bedsteps, which drop about three and four feet, respectively. Because of the relatively large cross section and the steep grade, the South Channel has the capacity to convey between 400 and 500 cfs, which is somewhere between a 25- and 50-year flood for this watershed.

Flash Flood Protection—Occupation of a floodplain in a flash flood-prone area constitutes a Class III action in reference to the National Park Service Floodplain Management Guidelines (NPS 93-3), with the regulatory floodplain defined as that inundated by an extreme flood. The **Qme** has previously been used as an estimate of the largest possible flood for a given watershed. Floods of this magnitude are exceptionally rare and not useful as a practical structural design standard. Knowledge of the conditions associated with the worst-case flood, however, can be useful for planning purposes and to help ensure human safety.

The **Qme** flow would reach the majority of the fort buildings with at least shallow, but swiftly flowing water and debris. There are no reasonable alternatives that would provide for full protection from the **Qme** flood damage to the historic resources, staff, and visitors at the fort. Options to optimize flood protection using on-site historic water conveyances, such as the North Ditch and the South Channel dike system are sympathetic to the current and future objectives for the site and have been proposed as alternative elements in this GMP. The optimized North Ditch and South Channel dike system would provide protection from flash flooding, however, at less than the 100-year event. (WRD, 1999). The construction of additional protective dikes and diversion structures has also been considered for many years, but deemed to be too disruptive to the cultural and

historic resources of the site. These additional protective devices would also have to be constructed very close to the historic buildings (Blackstun, 1997).

There have been no structural proposals that would provide any significant additional protection to staff and visitors against flash flooding. Short of the unreasonable options of completely denying access to staff and visitors from the flash flood-prone fort location or moving structures out of the flood zone there are no absolute protective measures available. Flood warning systems that rely on electronic sensors or personal observations are not foolproof in flash flood-prone areas such as this one. But, because of the nonconfining nature of the alluvial fan, the overbank flows are likely to occur as sheet flows and will likely not attain substantial depth. Flood flows in this area have the potential to affect the headquarters/visitor center building, the refurbished barracks, and on-site staff residences, and might affect the Church Camp building. Hydraulic modeling, however, indicates that overbank flow resulting from floods up to the 500-year recurrence interval would obtain depths of less than 1 foot, and associated velocities would not exceed 3 feet per second. On the other hand, the **Qme** could be capable of achieving depths in the range of 2 feet across the fan, with associated velocities ranging from 4–6 feet per second. While these conditions are not extremely dangerous, the combination of the depth, velocities, and the large area of inundation could be life threatening. Thus, in all but the most extreme floods, staff and visitors would still have enough time and ability to evacuate the flood-prone areas to safety.

The Church Camp building is located in upper Hospital Canyon within fifty feet of the drainage channel. The structure is used for occasional daytime meetings, and less frequently for over night stays by park volunteers or staff. Because of the

effort made to address potential flooding impacts to park resources and visitor safety in the lower canyon and fort location, the Church Camp has been identified as a location requiring a flood threat decision. Using topographic mapping and a rudimentary hydrologic analysis, it appears that the Church Camp building might be in the 500 year flood plain and possibly be threatened by the maximum flood in the canyon; both would require NPS management decisions about future use for over night stays. Current written and verbal records in the park indicate no historical problem with flooding at the site, thus no change in use would be proposed. At the next opportunity however, the park would have a reconnaissance and/or survey level study made of the Church Camp Building and the surrounding drainage area. Then, depending upon the level of flooding threat, park managers may be required to file a statement of findings on decisions regarding future use of the Church Camp.

Consideration of the severity of the threat of flash flooding to the historic resources, staff, and visitors would be a part of future planning by the NPS at Fort Davis. Attached to this GMP is a Statement of Findings (SOF) that documents the current commitment of the NPS to continue occupation of the flash flood-prone area of Fort Davis with historic structures, visitor center, maintenance areas, and staff residences. The SOF confirms that a flood mitigation plan should be developed as a part of the chosen alternative. This plan should be protective of and sympathetic to the historic/cultural resources as well as staff and visitor safety. Options to be considered in the flood mitigation plan would be:

- Develop a plan to minimize the threat to historic resources, staff, and visitors that includes:
 1. Priorities for historic resources that could be moved/protected.
 2. Closure conditions.
 3. Seasonal, watershed saturation, and storm event priorities.
 4. Notification protocols for park staff and visitors.
- Train staff and volunteers in the implementation of the plan.
- Prepare informational and warning signs and brochures.
- Establish formal notification/warning procedures between the Fort Davis NHS and the National Weather Service.
- Heightened awareness during the monsoon rain months of July, August, and September, especially when the watershed is saturated by previous rains.
- Formalization of evacuation routes and mobilization sites for rescue.
- Review and revise the plan elements every 2–3 years.

Impacts of the No-Action Alternative—Alternative A

Wetlands—In the no-action alternative, the South Channel would remain the only operational drainage system from the Davis Mountains through Fort Davis NHS, carrying the full surface drainage for all storm events. Wetlands associated along the South Channel ephemeral stream would be periodically disrupted by flooding events (a normal condition), but functioning naturally in all storm flow events. Created wetlands associated with the currently dysfunctional North Ditch and the South Channel dike system would continue to become drier as the water conveyance function ceases in all but moderate to high flow storm events.

Floodplain/Flash Floods—In the no-action alternative there would be insufficient safeguards from flash flooding to protect park resources. Buildings closest to the South Channel (headquarters/visitor center building and refurbished barracks) would be the most threatened by flooding of the 100-year or greater magnitude frequency, but all structures, some building contents, park staff, and visitors would continue to be

threatened by flash flooding. The currently dysfunctional North Ditch and South Channel dike system would provide no protection from flooding.

Impacts of Alternative B

Wetlands—Portions of flood flows of low to moderate frequency would be intercepted by a rehabilitated North Ditch. Created intentional wetlands existing along the North Ditch would be maintained in function, but would be periodically disrupted for maintenance after flooding events. Minor disruption to the created wetlands would occur during the rehabilitation of the North Ditch. Wetlands associated along the South Channel ephemeral stream would be periodically disrupted by flooding events (a normal condition), but functioning naturally in all storm flow events. Created wetlands associated with the currently dysfunctional South Channel dike system would continue to become drier as water conveyance function ceases in all but moderate to high flow storm events.

Floodplain/Flash Floods—Minor improvements to protect against the potential flooding of the historic buildings would be implemented by optimizing flow in the North Ditch. Low to moderate flows would be conveyed around the fort grounds, but large magnitude runoff events, such as the 100-year flood or greater, would likely exceed the capacity of the existing system no matter how it is managed. Buildings closest to the South Channel (headquarters/visitor center building and refurbished barracks) would be the most threatened by flooding of the 100-year or greater magnitude frequency, but all structures, some building contents, park staff, and visitors would continue to be threatened by flash flooding. Fortunately, because of the nonconfining nature of the alluvial fan location, overbank flows are likely to occur as sheet flows and are not likely to obtain substantial depth. An exception to this is

the extreme Maximum Estimated Flood, which could possibly produce dangerous conditions.

This alternative provides some reduced flood flow in the South Channel (50–100 cfs. when the flow reaches 200+ cfs.). Historic flood flow patterns established 100+ years ago would be largely preserved.

The dike would require initial rehabilitation and periodic maintenance to continue the flood protection. While providing some greater flood protection at low to moderate flows, this alternative this alternative would provide an increased risk of greater periodic flood damage to structures below the North Ditch were the ditch to be overwhelmed in a heavy flood event

Impacts of Alternative C

Wetlands—Portions of flood flows of low to moderate frequency would be intercepted by a rehabilitated North Ditch and South Channel dike system. Created intentional wetlands existing along the North Ditch and the South Channel dikes would be maintained in function, but would be periodically disrupted for maintenance after flooding events. Minor disruption to the created wetlands would occur during the rehabilitation. Wetlands associated along the South Channel ephemeral stream would be periodically disrupted by flooding events (a normal condition), but function naturally in all storm flow events.

Floodplain/Flash Floods—Minor improvements to protect against the potential flooding of the historic buildings would be implemented by optimizing flow in the North Ditch and the South Channel dike system. Low to moderate flows would be conveyed around the fort grounds, but large magnitude runoff events, such as the 100-year flood or greater, would likely exceed the capacity of the existing system no matter how it is

managed. Buildings closest to the South Channel (headquarters/visitor center building and refurbished barracks) would be the most threatened by flooding of the 100-year or greater magnitude frequency, but all structures, some building contents, park staff, and visitors would continue to be threatened by flash flooding. Fortunately, because of the nonconfining nature of the alluvial fan location, overbank flows are likely to occur as sheet flows and are not likely to obtain substantial depth. An exception to this is the extreme Maximum Estimated Flood, which could possibly produce dangerous conditions.

This alternative provides some reduced flood flow in the South Channel (50–100 cfs when flow reaches 200+ cfs). Historic flood flow patterns established 100+ years ago would be largely preserved. The ditch and the dikes would require initial rehabilitation and periodic maintenance to continue the flood protection. While providing the greatest flood protection of any of the alternatives at low to moderate flows, this alternative would provide an increased risk of greater periodic flood damage to structures below the North Ditch and the South Channel dikes were the ditches and dikes to be overwhelmed in a heavy flood event.

Impacts of Alternative D

Wetlands—All surface flows would be concentrated in the ephemeral South Channel stream, which was the natural surface flow condition prior to the U.S. Army ditch and dike system. The function of the wetlands associated with this stream would be largely preserved. Some disturbance would occur during minor rehabilitation of this channel and during periodic maintenance after flooding events. Wetlands associated along the South Channel ephemeral stream would be periodically disrupted by flooding events (a normal condition), but function naturally in all storm flow events. Created

wetlands associated with the currently dysfunctional North Ditch and the South Channel dike system would continue to become drier as their water conveyance function ceases in all but moderate to high flow storm events.

Floodplain/Flash Floods—All surface flows would be concentrated in the ephemeral South Channel stream, which was the natural surface flow drainage condition prior to the establishment by the army of the ditch and dike system. Both the North Ditch and the South Channel dike system would be blocked to exclude diversions of South Channel flows, but would be allowed to remain as historic elements of the landscape. The most pertinent consequence of directing flows toward the South Channel is a somewhat more frequent instance of overbank flows. Buildings closest to the South Channel (headquarters/visitor center building and refurbished barracks) would be the most threatened by storm-event flooding of the 100-year or greater magnitude frequency, but all structures, some building contents, park staff, and visitors would continue to be threatened by flash flooding.

This alternative disturbs the least area while providing some flooding protection. Buildings threatened by the failure of the North Ditch or South Channel dike system during medium to high flow events (greater than the 100-year event) would gain some protection. This allows for the preservation of the appearance, but not the function, of an approximately 100+-year-old feature of the fort.

There would be some unquantified but minor reduction in historic groundwater hydrology along the North Ditch and the South Channel dike system. During low to moderate flood flow conditions there would be a minor increase in flow along the South Channel stream, possibly affecting culverts, channels, and residential areas outside of the park

boundary. This would require some hydraulic analysis. It could also require permitting by the U.S. Army Corps of Engineers (Section 404, Clean Water Act).

Wildlife and Threatened and Endangered Species

The Davis Mountains have abundant wildlife. Since the natural western boundary of Fort Davis NHS is shared with the Davis Mountains State Park, the potential for a large variety of fauna exists. Two species of deer—white-tailed (*Odocoileus virginianus*) and mule (*Odocoileus hemionus*)—are common. The collared peccary (*Pecari tajacu*), commonly known as javelina, is prevalent. The coyote (*Canis latrans*), bobcat (*Felis rufus*), mountain lion (*Felis concolor*), pronghorn (*Antilocapra americana*), gray fox (*Urocyon cinereoargenteus*), desert cottontail (*Sylvilagus audubonii*), eastern cottontail (*Sylvilagus floridanus*), blacktail jackrabbit (*Lepus californicus*), raccoon (*Procyon lotor*), ringtail (*Bassariscus astutus*), and the common skunk (*Mephitis mephitis*) also make the area their habitat. Black bear (*Ursus americanus*) were present historically and are sighted today on rare occasions in the Davis Mountains.

Smaller mammals, such as the ground squirrel (*Sperophilus mexicanus*), rock squirrel (*Spermophilus variegatus*), pocket gopher (*Thomomys bottae*), deer mouse (*Peromyscus maniculatus*), and house mouse (*Mus Musculus*), as well as two species of bats—Mexican free-tailed (*Tadarida brasiliensis*) and Pallid (*Antrozous pallidus*)—are common in the park. Birds most commonly found at the fort are the barn and cliff swallow (*Hirundo rustica* and *pyrrhonota*), flycatcher (*Muscicapidae*), rock wren (*Salpinctes obsoletus*), turkey vulture (*Cathartes avra*), and red tail hawk (*Buteo jamaicensis*). A variety of reptiles and amphibians are also found at the fort.

According to the U.S. Fish and Wildlife Service (8/17/99), endangered species listed in Jeff Davis County, Texas, that have confirmed sightings are:

- American peregrine falcon (*Falco peregrinus anatum*)
- Black-capped vireo (*Vireo atricapillus*)
- Least tern (*Sterna antillarum*)
- Northern aplomado falcon (*Falco femoralis septentrionalis*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Comanche Springs pupfish (*Cyrinodon elegans*)
- Pecos gambusia (*Gambusia nobilis*)
- Little Aguja pondweed (*Potamogeton clystocarpus*)

The U.S. Fish and Wildlife Service also listed several species of concern.

According to park natural resource staff, there are no known threatened or endangered species in the park.

Impacts of the No-Action Alternative—Alternative A

Current visitor use patterns do not affect wildlife habitats within the park.

Impacts of the Action Alternatives (B, C, and D)

Visitor use patterns would not affect wildlife habitats within the park. No wildlife habitat would be lost.

Conclusion—None of the alternatives considered would have any significant immediate or cumulative impact on wildlife or threatened and endangered species.

Air Quality

The park is within a Class II airshed. While visibility is usually clear, some serious concerns have been expressed about the air quality of the region.

Existing Sources of Pollution—Automobiles are one source of air

pollution. Traffic on roads produces an unknown quantity of pollutants, which may contribute to haze. Both inside and outside the park, dust is a problem where gravel roads and parking areas are heavily used.

Impacts of All Alternatives

Air quality would continue to be monitored and corrective actions taken within the park's jurisdiction, to maintain the Class II Airshed.

Conclusion—None of the alternatives considered would have any significant immediate or cumulative impact to the air and visual quality of the park.

Noise

Noise conditions vary from almost absolute solitude available in the western portions of the park to the military sounds heard on the parade ground to the sounds of bus motors in the parking area.

Impacts of the No-Action Alternative

Noise would continue to be managed as it has been in the past.

Impacts of Alternatives B and C

Alternatives B and C would slightly decrease (and thus positively affect) the amount of noise in the park by managing parking area congestion.

Conclusion—Neither of these alternatives would cause any significant immediate or cumulative noise impact that would affect visitor experience.

Impacts of Alternative D

Alternative D would slightly increase the amount of noise in certain developed areas by providing additional parking. As scope and areas for actions allowed under this plan are developed, further environmental review and analysis would be needed.

Conclusion—This alternative would not cause any significant immediate or cumulative noise impact that would affect visitor experience.

ECONOMIC CONTRIBUTIONS OF COMMUNITIES

Affected Environment

Fort Davis is approximately 160–180 miles southwest of Odessa-Midland, Texas, and 200 miles southeast of El Paso, Texas. A range of services (including lodging, gas, and food) can be found in the adjacent town of Fort Davis, a small, unincorporated, community of approximately 1,200 people. There is no zoning to govern the appearance or uses of the town.

The exact dollar amount of increases cannot be predicted because of the general nature of this plan. We can estimate the effect of future possible actions, however, using information from **the Money Generation Model (1990)**. These estimates are shown for the impacts of alternatives below.

The existing budget for the park provides income to the local economy. Total combined sales from park operating expenditures are about \$2.8 million annually. Total increased tax revenue gained from park-related activities is about \$.23 million annually. Operations and use of the park result in approximately 85 jobs for the local community.

For every 1,000 additional visits, approximately \$23,000 in combined sales is added to the local economy along with \$2,000 in increased tax revenue. One additional job is also created. For every \$100,000 expended by the park, approximately \$160,000 in combined sales is added to the local economy along

with \$13,000 in increased tax revenue. Five additional jobs are also created.

Impacts of the No-Action Alternative

There would be no additional contribution to the local economy from this alternative.

Impacts of Alternative B

This alternative would provide a slight short-term increase to the local economy. There are two types of estimated increases: short-term (from capital investment) and long-term (from an increase in the annual operating budget).

In the short term, it is estimated that an expenditure of about \$.34 million would create a one-time benefit to the economy. The benefits would be an increase of \$.53 million in total combined sales, approximately \$44,000 in tax revenue, and approximately 16 additional jobs. This would not necessarily occur in the local economy.

In the long term, there would be no additional contribution to the economy.

Conclusion—Alternative B would provide a slight beneficial increase to the socioeconomics of the area.

Impacts of Alternative C

The proposal would provide a short-term increase in the economic contribution to the local community.

In the short term, it is estimated that an expenditure of about \$.79 million would create a one-time benefit to the economy. The benefits would be an increase of \$1.2 million in total combined sales, approximately \$102,000 in tax revenue, and approximately 37 additional jobs. This would not necessarily occur in the local economy. Upon implementation of phase II, it is estimated that an expenditure of an additional \$1.4 million would create an

additional one-time benefit of \$2.4 million in total combined sales, \$208,000 in tax revenue, and 75 jobs for the life of the projects.

In the long term, increases in the park's operational budget of \$106,000 would create a benefit to the economy of \$169,000 in total combined sales and approximately \$14,000 in tax revenue and would create 5 jobs in the local economy. Upon implementation of phase II, an additional increase in the park's operational budget of \$66,000 would create an additional benefit to the economy of \$106,000 in total combined sales and approximately \$9,000 in tax revenue and would create 3 jobs in the local economy.

Conclusion—Alternative C would provide a beneficial increase to the socioeconomics of the area. Upon implementation of phase II, there would be an additional minor beneficial increase to the socioeconomics of the area.

Impacts of Alternative D

This alternative would provide the most short-term increase in economic contributions to the local community.

In the short term, it is estimated that an expenditure of about \$2.4 million would create a one-time benefit to the economy. The benefits would be an increase of \$3.7 million in total combined sales, approximately \$312,000 in tax revenue, and approximately 114 additional jobs. This would not necessarily occur in the local economy.

In the long term, increases in the park's operational budget of \$172,000 would create a benefit to the economy of \$275,000 in total combined sales and approximately \$23,000 in tax revenue and would create 8 jobs in the local economy.

Conclusion—Alternative D would provide a beneficial increase to the socioeconomics of the area.

ADJACENT LANDOWNERS

Affected Environment

Some of the private parcels of land adjacent to the park are used for businesses and residential purposes. Specific impacts and values associated with land protection concerns are the preservation of historic resources and the setting in which they occur. Management actions under action alternatives seek to preserve the viewshed, the ambience, and the feeling of openness that encompass the fort and contribute to a quality experience for visitors.

Impacts of the No-Action Alternative

Under the no-action alternative, there would be no impacts on adjacent landowners.

Impacts of Alternatives B and C

Adjacent landowners would be encouraged to manage their land in ways that would be compatible with park values. Upon phase II implementation, there would be a positive benefit of increased community connection associated with the relocation of administrative offices outside the park.

Impacts of Alternative D

Adjacent landowners would be encouraged to manage their land in ways that would be compatible with park values. There would be a positive benefit of increased community connection associated with the relocation of administrative offices outside the park.

FACILITIES/OPERATIONAL EFFICIENCY

Affected Environment

For the most part, the current facilities at Fort Davis NHS are in good condition. In recent years, special funding for maintenance projects has resulted in the upgrading of several buildings to include:

- A fire suppression system in the restored enlisted men's barracks, which now houses the administrative offices, visitor center, museum, auditorium and curatorial office, and storage space.
- The painting of trim on several buildings along officers' row.
- New cedar roofs for two restored barracks.
- Improved accessibility between buildings.
- Added handicapped facilities in rest rooms.
- New air conditioning/heating units for several areas.

The maintenance facility is located at the park entrance and is partially screened by young trees. The trees help shield the maintenance complex and government quarters from visitors' view.

The park manages 175 historic buildings, foundations, and sites. Five historic buildings have been restored and refurnished, and 19 buildings have been partially restored (exterior). Other park facilities include a visitor center, administrative office complex, maintenance area, 3 residences, 2 water (well) systems for irrigation and fire protection purposes, picnic area, 2 sewer systems, 2 cesspools, 67 acres of mowed grounds with more than 160 trees, 3 miles of boundary fence, 4 miles of self-guided trails, and 6.1 miles of roads.

Existing Conditions and Use of Park Facilities—The park visitor center, museum, auditorium, administrative offices, and curatorial storage are housed in a historic military barracks. The interior

floor area for this structure is 6,210 square feet and is in good condition. The structure is inadequate in size to accommodate the needs of administration, interpretation, and curatorial work.

The maintenance facility is enclosed within a masonry wall and consists of a storage building for flammable products, a utility shed, a maintenance shop, a utility yard, and one small, self-contained storage shed. The enclosed interior floor area is approximately 1,500 square feet. The structures are in fair condition, but are inadequate for their intended uses. Several OSHA and Life, Health, Safety violations exist that are not correctable without additional facilities and funding.

Park roads consist of 1.4 miles of bituminous paved surface and 4.7 miles of unpaved service roads. Paved surfaces are in good condition, and unpaved surfaces are in fair condition. The paved roads provide access into the park, the visitor parking area, and the housing and maintenance areas. All unpaved surfaces provide access to the historic buildings, ruins, trails, and utilities.

Park housing is in good condition. The residence is a triplex building, containing three residences with attached one-car garages and detached exterior storage sheds. Each residence has approximately 1,100 square feet of interior floor area. The storage shed has 135 square feet of interior floor area.

There is inconsistency within the park as to the number of recorded historic buildings, ruins, and sites. The List of Classified Structures includes 110 structures on the inventory. The park inventory lists 125 buildings/ruins, 42 unexcavated sites, and 8 archeological sites. For the purpose of the GMP the total of 175 units is used.

Of the 125 buildings recorded, there are five restored and refurnished historic

structures, 3 historic structures that have been partially restored (exterior), and 117 ruins. Of the 117 ruins, 18 have shingle roofs for protection. All other ruins are unprotected and exposed.

Existing conditions of historic buildings/ruins/sites are as follows:

- Restored and furnished historic structures: 4 Good, 1 Fair (5)
- Partially restored historic structures: 1 Good, 2 Fair (3)
- Ruins w/Roofs: 9 Good, 9 Fair (18)
- Ruins, exposed: 51 Good, 62 Fair, 4 Poor (117)
- Unexcavated Ruins: Condition Unknown (42)
- Archaeological Sites: 3 Good, 4 Fair, 1 Poor (8)

Utilities within the park include one 50,000-gallon water storage tank, 13,800 linear feet of water line, 2 water wells, and 4 septic systems (2 tanks w/leach field and 2 cesspools). Two of the four septic systems are in fair condition, and the two cesspools are considered to be in poor condition. The cesspools should be replaced when funding is available. The water lines are in fair condition, but need to be upgraded to provide sufficient volume for fire protection and for routine irrigation.

Other park facilities include 1 bunkhouse, 3 wooden bridges, 104 informational signs, 1 flagpole, 3 trailer sites with partial concrete pads, 2 weather stations, and an employee gravel, 15-car unpaved parking area between the maintenance and residential area.

Three bridges provide access across historic ditches and into the historic core area. One bridge, located at the visitor parking area, is for pedestrian access only and is in good condition. The other two wooden bridges provide pedestrian and vehicular access across ditches. These two bridges are in fair condition but will

require structural repair to the tread surfaces.

The bunkhouse is in the backdrop area in hospital canyon. It is an open structure with no divided rooms except for rest room facilities. It has gas utilities and water only. The structure is in fair condition. It is used intermittently in the summer months for volunteers and researchers.

The three trailer pads are used for long-term volunteers and are in good condition. The sites have electric, sewer, water, cable, and telephone service hookups.

All other facilities, including signs, flagpole, weather stations, and parking areas, are in good to fair condition.

In some areas of Fort Davis NHS access for visitors with disabilities is adequate. An electric cart is available to visitors upon request. Three furnished buildings currently are accessible to visitors with disabilities, and the remaining buildings are scheduled for improved access. Two handicap spaces are reserved in the parking lot. The surfaces of many visitor-use paths are uneven and difficult for wheelchair use.

Impacts of the No-Action Alternative—Alternative A

The effects of the no-action alternative would be a continuation of the present situation. The current visitor center is too small to meet the needs of increasing visitation. Space is not available to conduct environmental education programs. The existing water distribution system is inadequate to meet fire suppression needs.

Impacts of Alternative B

Impacts on operational efficiency would slightly increase with an improved water system and equipment to meet fire protection needs. Space would be

increased for visitor orientation and environmental education. There would be an increase of personal services and outreach education programs for visitors.

Impacts of Alternative C

Impacts on operational efficiency would slightly increase with an improved water system and equipment to meet fire protection needs. Space would be increased for visitor orientation and environmental education. There would be an increase of personal services and outreach education programs for visitors.

Impacts of phase II implementation are documented in Alternative D.

Impacts of Alternative D

The construction of new facilities outside the existing boundary would result in the consolidation of all administrative functions. Considerable savings would be realized in terms of human and fiscal resources. Historic structures would be used more appropriately. New maintenance facilities would improve views into the park from State Highways 17 and 118. Significant savings would be realized by having adequate storage facilities to safeguard equipment, supplies, materials, and the museum collection.

Visitors would be better served with facilities large enough to meet their needs through space improvements in existing visitor facilities. An improved water distribution system would enhance employee and visitor safety by ensuring a dependable supply for fire suppression.

SHORT-TERM AND LONG-TERM EFFECTS OF THE PROPOSAL

Compared with a land base of 473.87 acres, land-use consumption would decrease by about .2 acres with the

remodeling of the existing visitor facilities. The proposal would improve long-term management, provide better protection to the environment, and enhance visitor experience.

Interpretation and visitor orientation would be more effective. Also, managers would be more efficient and effective in carrying out long-term management goals through the use of broadly defined prescriptions for land management contained in the proposal.

There would be minor benefits to the economy. Short term, from the expenditure of about \$.8 million, a one-time benefit of \$1.2 million in total combined sales, \$102,000 in tax revenue, and 37 jobs would result for the life of the projects. Long term, from the expenditure of about \$.1 million for additional staff, an annual benefit of \$169,000 in total combined sales, \$14,000 in tax revenue, and 5 jobs would result. If phase II were implemented, additional benefits would accrue to the economy. All the benefits would not necessarily occur in the local economy.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES RELATED TO THE PROPOSAL

Some archeological sites are subject to irreversible damage (because of vandalism and loss of contextual relationships between objects) that compromises these sites. When objects are removed from a site or moved within a site, this irreversible damage affects the potential for future archeological research to fully derive all scientific knowledge from that particular site.

Additional visitation would tend to increase the potential for more damage

occurring to archeological sites and the loss of artifacts. This could occur no matter what protective measures are put in place or what messages are provided through interpretation and education.

CUMULATIVE EFFECTS OF THE PROPOSAL

The impact analysis of the proposed GMP looks at all actions in the past, present, and reasonably foreseeable future that would affect Fort Davis NHS and its visitors. Cumulative effects would be insignificant and no elements of precedence were identified by any of the alternatives considered.

The NPS proposal for parking improvements and dike modifications for protecting historic resources from flash floods would disrupt less than 1 acre of previously disturbed area. Remodeling of the quarters would reduce impacts on the historic resource and increase operational efficiency.

Wetlands—There would be minor disruptions to natural stream corridor wetlands during periodic maintenance and minor short-term disturbance of created wetlands during periodic maintenance after flooding. Existing natural and created wetlands on site would be largely preserved as they have been for approximately 100 years. None of these actions represents a significant cumulative impact upon wetlands on the Fort Davis site or in the area outside of the park.

Floodplains/Flash Floods—Through the rehabilitation of the North Ditch and the South Channel dike system and the regular maintenance of the South Channel, there would be a reestablishment of flood flow regimes as they have operated since the late 1800s. No cumulative change would be affected on site through this reestablishment of

historic flood flows, and the off-site cumulative change to floodplain or flash flooding would be insignificant, since the

flows would be nearly identical to those experienced for approximately 100 years.



Ninth U.S. Cavalry on Parade
Fort Davis , Texas 1875

BIBLIOGRAPHY

Blackstun, David. 1997. (**Not an official) Flood Mitigation Assessment of Alternatives for Fort Davis National Historic Site, (Draft Report). U.S. Department of the Interior, National Park Service. 6 pp.

Bruno, Joseph. 1990. (**Not an official) Recommended Storm Damage Repairs and Flood Prevention Improvements, Fort Davis National Historic Site. U.S. Department of the Interior, National Park Service. 7 pp.

Cowardin, L., V. Carter, F. Golet, and E. LaRoe. 1979. Classification of the Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service. FWS/OBS-79/31. 131 pp.

Crippen, J., and C. Bue, 1977. Maximum Floodflows in the Conterminous United States. U.S. Geological Survey. USGS-WSP 1887.

Fish and Wildlife Service National Wetland Inventory Map. U.S. Department of the Interior, Fish and Wildlife Service.

Greene, Jerome A. 1986. Historic Resource Study, Fort Davis National Historic Site, Texas. U. S. Department of the Interior, National Park Service.

Intermountain Cultural Resource Center 5, 1996. Professional Paper No. 58, National Park Service, Santa Fe, New Mexico.

Ivy, James E. 1986. The Archeological Survey of Fort Davis and the Historical Base Map. National Park Service, Southwest Regional Office. This document is listed as Appendix K of Jerome A. Greene's Historic Resource Study, Fort Davis National Historic Site.

Jacobson, Lucy Miller, and Mildred Bloys Nored. 1993. Jeff Davis County, Texas. Fort Davis, Texas, Fort Davis Historical Society.

Martin, Michael, hydrologist. 1999. Flood Hazard Assessment for Fort Davis National Historic Site, Texas. Water Operations Branch,

Water Resources Division, National Park Service, Fort Collins, Colorado.

National Park Service. 1993. NPS 93-03, Floodplain Management Guidelines. U.S. Department of the Interior, National Park Service. Special directive 93-3. 14 pp.

National Park Service. 1998. Director's Order #77-1: Wetlands Protection. U.S. Department of the Interior, National Park Service. 4 pp.

National Park Service. 1998. Procedural Manual #77-1: Wetlands Protection. U.S. Department of the Interior, National Park Service. 31 pp.

National Park Service. 1999. Flood Hazard Assessment for Fort Davis National Historic Site, Draft Copy 6-17-99. Water Operations Branch, U.S. Department of the Interior, National Park Service. 7 pp.

Nelson, Dr. James T. 1981. The Historic Vegetative Aspect of Fort Davis National Historic Site, Texas. Range Animal Science Department, Sul Ross State University, Alpine, Texas.

Office of the State Archeologist. 1993. The Indians of Texas and the Plants They Used. Texas Historical Commission, Austin, Texas.

Schroeder and Massey, 1977. Technique for Estimating the Magnitude and Frequency of Floods in Texas. U.S. Geological Survey WRI 77-110, Water Supply Paper.

Soulliere, Laura E., survey historian. 1983. Fort Davis National Historic Site Historic Scene Management Plan. National Park Service, Southwest Regional Office.

Sutton, John M. 1986. Fort Davis National Historic Site Historic Tree Management Plan. Fort Davis National Historic Site, Texas.

Texas Historical Commission. 1995. Texas Archeology in the Classroom: A Booklet of Activity Ideas and Lesson Plans for Teachers.

BIBLIOGRAPHY

Office of the State Archeologist, Texas
Historical Commission, Austin, Texas.

Utley, Robert M. 1965. Fort Davis National
Historic Site, Texas. Washington, D.C.:
Government Printing Office.

Welsh, Michael. n.d. A Special Place, A Sacred
Trust: Preserving the Fort Davis Story.
Administrative History, Fort Davis National
Historic Site.

Wooster, Robert. 1990. History of Fort Davis,
Texas. Southwest Cultural Resources Center
Professional Papers, Number 34, National
Park Service, Santa Fe, New Mexico.

CONSULTATION/COORDINATION

HISTORY OF PUBLIC INVOLVEMENT/AGENCIES CONSULTED

As described in the Purpose and Need, Planning Process section, scoping was conducted twice for the Fort Davis NHS GMP. The notice of intent to publish an environmental impact statement was published in the *Federal Register* on November 19, 1998. This draft environmental impact statement will be available for public review for a minimum of 60 days.

The following agencies were contacted during preparation of the plan:

U.S. Department of Interior, Fish and Wildlife Service

Texas State Historic Preservation Office

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REFERENCES CITED

APPENDIX 1: LEGISLATION

5. Fort Davis National Historic Site

Establishment authorized.....Act of September 8, 1961 Page
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An Act Authorizing the establishment of a national historic site at Fort Davis, Jeff Davis County, Texas, approved September 8, 1961 (75 Stat. 488)

Fort Davis
National Historic Site, Tex.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior shall acquire, on behalf of the United States, by gift, purchase, condemnation, or otherwise, all right, title, and interest in and to such lands, not to exceed four hundred and sixty acres in all, together with any improvements thereon, as the Secretary may deem necessary for the purpose of establishing a national historic site at the site of Fort Davis, near the town of Fort Davis, Jeff Davis County, Texas.

39 Stat. 535.
16 U.S.C. 1-4.

SEC. 2. (a) The property acquired under the provisions of the first section of this Act shall be designated as the Fort Davis National Historic Site and shall be set aside as a public national memorial to commemorate the historic role played by such fort in the opening of the West. The National Park Service, under the direction of the Secretary of the Interior, shall administer, protect, and develop such monument, subject to the provisions of the Act entitled "An Act to establish a National Park Service, and for other purposes", approved August 25, 1916, as amended and supplemented, and the Act entitled "An Act to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance, and for other purposes", approved August 21, 1935, as amended.

49 Stat. 666.
16 U.S.C. 461-467.

(b) In order to provide for the proper development and maintenance of such national historic site, the Secretary of the Interior is authorized to construct and maintain therein such markers, buildings, and other improvements and such facilities for the care and accommodation of visitors, as he may deem necessary.

Appropriation.

SEC. 3. There are hereby authorized to be appropriated such sums, but not more than \$115,000 for land acquisition, as are necessary to carry out the provisions of this Act. (16 U.S.C. § 461 note.)

PUBLIC LAW 105-355—NOV. 6, 1998

112 STAT. 3247

Public Law 105-355
105th Congress

An Act

To authorize the Automobile National Heritage Area in the State of Michigan,
and for other purposes.

Nov. 6, 1998
[H.R. 3910]

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

**TITLE I—AUTOMOBILE NATIONAL
HERITAGE AREA OF MICHIGAN**

Automobile
National
Heritage Area
Act.
16 USC 461 note
[table].

SEC. 101. SHORT TITLE.

This title may be cited as the “Automobile National Heritage Area Act”.

SEC. 102. FINDINGS AND PURPOSES.

(a) FINDINGS.—The Congress finds that—

(1) the industrial, cultural, and natural heritage legacies of Michigan's automobile industry are nationally significant;

(2) in the areas of Michigan including and in proximity to Detroit, Dearborn, Pontiac, Flint, and Lansing, the design and manufacture of the automobile helped establish and expand the United States industrial power;

(3) the industrial strength of automobile manufacturing was vital to defending freedom and democracy in 2 world wars and played a defining role in American victories;

(4) the economic strength of our Nation is connected integrally to the vitality of the automobile industry, which employs millions of workers and upon which 1 out of 7 United States jobs depends;

(5) the industrial and cultural heritage of the automobile industry in Michigan includes the social history and living cultural traditions of several generations;

(6) the United Auto Workers and other unions played a significant role in the history and progress of the labor movement and the automobile industry;

(7) the Department of the Interior is responsible for protecting and interpreting the Nation's cultural and historic resources, and there are significant examples of these resources within Michigan to merit the involvement of the Federal Government to develop programs and projects in cooperation with the Automobile National Heritage Area Partnership, Incorporated, the State of Michigan, and other local and governmental bodies, to adequately conserve, protect, and interpret



PUBLIC LAW 105-355—NOV. 6, 1998

112 STAT. 3263

(4) Kaiser Corporation supported women workers by installing child care centers at the shipyards so mothers could work while their children were well cared for nearby.

(5) These women, referred to as “Rosie the Riveter” and “Wendy the Welder”, built hundreds of Liberty and Victory ships in record time for use by the United States Navy. Their labor played a crucial role in increasing American productivity during the war years and in meeting the demand for naval ships.

(6) In part the Japanese plan to defeat the United States Navy was predicated on victory occurring before United States shipyards could build up its fleet of ships.

(7) The City of Richmond, California, has dedicated the former site of Kaiser Shipyard #2 as Rosie the Riveter Memorial Park and will construct a memorial honoring American women’s labor during World War II. The memorial will be representative of one of the Liberty ships built on the site during the war effort.

(8) The City of Richmond, California, is committed to collective interpretative oral histories for the public to learn of the stories of the “Rosies” and “Wendys” who worked in the shipyards.

(9) The Rosie the Riveter Park is a nationally significant site because there tens of thousands of women entered the workforce for the first time, working in heavy industry to support their families and the War effort. This was a turning point for the Richmond, California, area and the Nation as a whole, when women joined the workforce and successfully completed jobs for which previously it was believed they were incapable.

(b) STUDY.—

(1) IN GENERAL.—The Secretary of the Interior shall conduct a feasibility study to determine whether—

(A) the Rosie the Riveter Park located in Richmond, California, is suitable for designation as an affiliated site to the National Park Service; and

(B) the Rosie the Riveter Memorial Committee established by the City of Richmond, California, with respect to that park is eligible for technical assistance for interpretative functions relating to the park, including preservation of oral histories from former workers at the Richmond Kaiser Shipyards.

(2) REPORTS.—Not later than 6 months after the date of the enactment of this Act, the Secretary shall complete the study under paragraph (1) and submit a report containing findings, conclusions, and recommendations from the study to the Committee on Resources of the House of Representatives and the Committee on Energy and Environment of the Senate. Deadline.

SEC. 506. FORT DAVIS HISTORIC SITE, FORT DAVIS, TEXAS.

The Act entitled “An Act Authorizing the establishment of a national historic site at Fort Davis, Jeff Davis County, Texas”, approved September 8, 1961 (75 Stat. 488; 16 U.S.C. 461 note), is amended in the first section by striking “not to exceed four hundred and sixty acres” and inserting “not to exceed 476 acres”.



PUBLIC LAW 105-355—NOV. 6, 1998

112 STAT. 3267

“(3) LAND ACQUISITION.—Notwithstanding subsection (h), the Secretary is authorized to acquire, in partnership with other entities, a less than fee interest in lands at Thompson Island within the recreation area. The Secretary may acquire the lands only by donation, purchase with donated or appropriated funds, or by exchange.”.

Approved November 6, 1998.

LEGISLATIVE HISTORY—H.R. 3910:

CONGRESSIONAL RECORD, Vol. 144 (1998):

Oct. 10, considered and passed House.

Oct. 14, considered and passed Senate.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 34 (1998):

Nov. 6, Presidential statement.



APPENDIX 2: FUTURE PLANS AND STUDIES NEEDED

Future plans and studies needed for Fort Davis NHS include:

- New Comprehensive Archeological Survey
- Condition Assessments of archeological sites
- Cultural Landscape Inventory
- Cultural Landscape Report
- Ethnographic Study
- Comprehensive Interpretive Plan
- Natural Resource Management Plan and Fauna Study
- Cultural Resource Management Plan
- Safety Plan
- Flash Flood Plan (includes floodplain map)
- Historic Preservation Plan identifying types and levels of treatment
- Structural Fire Management Plan
- Wildland Fire Management Plan
- Transportation Study: Should visitation reach 125,000 visitors a year, a study would be initiated to evaluate the feasibility of a transportation system from the town of Fort Davis.

APPENDIX 2: FUTURE PLANS AND STUDIES / RESEARCH

- 1. The first study was conducted in 1998 and 1999, focusing on the impact of the new curriculum on the teaching and learning of English in primary schools.
- 2. The second study was conducted in 2000 and 2001, focusing on the impact of the new curriculum on the teaching and learning of English in secondary schools.
- 3. The third study was conducted in 2002 and 2003, focusing on the impact of the new curriculum on the teaching and learning of English in tertiary institutions.
- 4. The fourth study was conducted in 2004 and 2005, focusing on the impact of the new curriculum on the teaching and learning of English in the workplace.
- 5. The fifth study was conducted in 2006 and 2007, focusing on the impact of the new curriculum on the teaching and learning of English in the community.
- 6. The sixth study was conducted in 2008 and 2009, focusing on the impact of the new curriculum on the teaching and learning of English in the digital age.
- 7. The seventh study was conducted in 2010 and 2011, focusing on the impact of the new curriculum on the teaching and learning of English in the global context.
- 8. The eighth study was conducted in 2012 and 2013, focusing on the impact of the new curriculum on the teaching and learning of English in the 21st century.
- 9. The ninth study was conducted in 2014 and 2015, focusing on the impact of the new curriculum on the teaching and learning of English in the future.
- 10. The tenth study was conducted in 2016 and 2017, focusing on the impact of the new curriculum on the teaching and learning of English in the next decade.

APPENDIX 3: DRAFT STATEMENT OF FINDINGS

FOR EXECUTIVE ORDER 11988 "FLOODPLAIN MANAGEMENT"

**General Management Plan/Environmental Impact Statement
Fort Davis National Historic Site
Texas**

Recommended: _____
Superintendent, Fort Davis National Historic Site Date

Concurred: _____
Chief, Water Resources Division Date

Approved: _____
Director, Intermountain Region Date

In accordance with Executive Order 11988 (Floodplain Management) and National Park Service guidelines for implementing the order, the National Park Service (NPS) has evaluated flooding hazards for the Fort Davis National Historic Site and has prepared this statement of findings (SOF). As an integral part of the effort to develop a general management plan (GMP), the SOF describes the flood hazard, alternatives, impacts, mitigation, and informed decisions for the continued use of the historic site. Additional detail regarding the historic site, flooding history, and future plans may be found in the GMP.

INTRODUCTION

Fort Davis National Historic Site was authorized in 1961, symbolizing the era of western migration and the essence of the late 19th-century U.S. Army. The park preserves the historic landscape and buildings, ruins, and foundations of two forts, and makes them available to thousands of visitors for their enjoyment, understanding, education, and appreciation.

Since the establishment of Fort Davis in 1854, military personnel and now park managers have been plagued by periodic flash flooding of the site. Intense thunderstorms, which are characteristic of the region, often produce high volumes of runoff water. Given the small size of the watershed and the fort's position on an alluvial fan, some flooding may occur during summer months when rainfall is average or above average. The fort location is very likely within a flash flood zone.

During the second fort period (1867–1891), the army constructed a series of dikes and ditches to alleviate flooding of the fort. These protective structures are still in use, but because of limited design effectiveness (less than 100-year flood

protection), erosion, human disturbances, and extensive maintenance requirements, these safeguards are not adequate to protect the area. Three action alternatives were considered in the general management plan, because of the fort's position on the alluvial fan no structural alternative could significantly reduce the threat of flash flooding while meeting the park's legislated purpose.

The NPS will continue to operate Fort Davis NHS with an operational plan (flood mitigation plan) that lowers the threat to life and property within the park. Fort Davis NHS will develop this plan, regularly educate staff and visitors in its detail, and periodically review it with any additional weather or flooding information that becomes available. The proposed plan in the general management plan (Alternative C) would reduce some flooding risk to historic structures and the cultural landscape of the fort, but would not provide any additional protection to those resources, park staff, or visitors during floods of a magnitude greater than the 100-year flood.

USE OF THE FLOODPLAIN

The historic core area of the fort lies on the alluvial floodplain. The U.S. Army chose this location for the fort. The NPS is committed through its enabling legislation to preserve and interpret the historic resources that include structures in the floodplain. The flood-prone alluvial fan area of the fort is occupied primarily during daytime hours. Three on-site staff residences are present along the far north edge and distal end of the alluvial fan. Occupation of a floodplain in a flash flood-prone area constitutes a Class III action in reference to the National Park Service Floodplain Management Guidelines (NPS 1993), with the regulatory floodplain defined as that inundated by an extreme flood, and requires notification, warning, and

development of mitigation for the flooding threat. The Maximum Estimated Flood (Q_{me}) has previously been used as an estimate of the largest possible flood for a given watershed. Floods of this magnitude are exceptionally rare and not useful as a practical structural design standard. However, knowledge of the conditions associated with the worst-case flood can be useful for planning purposes and to help ensure human safety.

FLOOD RISK

Primary surface drainage through the fort occurs in the South Channel, flowing westerly around the historic structures. A floodplain map for the fort is not available at this time, but several surveyed cross sections were used with the U.S. Army Corps of Engineers' computer model, HEC-RAS, to compute hydraulic capacities of the dike and ditch system on site.

The dikes and ditches constructed by the army more than 100 years ago carry portions of surface flow as intercepting ditches and as diversion and detention ditch and dikes during storm events as little as 2–5-year floods and up to 50–100-year floods (see further description in Draft Environmental Impact Statement/General Management Plan, Fort Davis National Historic Site). During a flood event of 50 to 100-year frequency most of the partial flood control devices built by the army and maintained by the NPS would be overwhelmed, allowing flooding to access portions of the historic buildings. Flood flows in this area have the potential to affect the headquarters building, the visitor center, the barracks, and the on-site staff residences. The staff residences would be expected to experience backwater conditions, not any destructive depths or velocities during the 50-100, and even the 500-year frequency events.

Hydraulic modeling indicates that during the 500-year recurrence flood, overbank flow would attain depths less than 1 foot and associated velocities would not exceed 3 feet per second. The Q_{me} , on the other hand, could be capable of achieving depths in the range of 2 feet across the fan, with associated velocities ranging from 4–6 feet per second. While these conditions are not extremely dangerous, the combination of the depth, velocities, and the large area of inundation could be life threatening during daytime hours when the facility is occupied, and at night to the staff residences. Thus, in all but the most extreme flood, staff and visitors would still have enough time and ability to evacuate the flood-prone areas to safety.

The Q_{me} flow would reach the majority of the fort buildings and staff residences building with at least shallow, but swiftly flowing water and debris. The Q_{me} poses a potentially dangerous flooding condition to visitors and staff if it occurs. There are no reasonable alternatives that would provide for full protection from the Q_{me} flood damage to the historic resources or to staff and visitors at the fort. Options to improve flood protection using on-site historic water conveyances, such as the North Ditch and the South Channel dike system, are sympathetic to the current and future objectives for the site and have been proposed as alternative elements in the current GMP. However, the optimized North Ditch and South Channel dike system would provide protection from flash flooding at less than the 100-year magnitude event. (NPS 1999). The construction of additional protective dikes and diversion structures has also been considered for many years, but has been deemed to be too disruptive to the cultural and historic resources of the site. These additional protective devices would also have to be constructed very close to the historic buildings (NPS 1997).

There have been no structural proposals that would provide any significant additional protection to staff and visitors to flash flooding. Short of the unreasonable options of completely denying access to staff and visitors from the flash flood-prone fort location or moving structures out of the flood zone there are no absolute protective measures available. Flood warning systems that rely on electronic sensors or personal observations are not foolproof in flash flood-prone areas such as this one.

PROPOSED ACTION

The NPS will continue to operate Fort Davis National Historic Site in a safe and prudent manner by optimizing on-site flood protective dike and ditch systems and flood threat awareness training for staff and visitors. Park staff will seek funding for topographic mapping of the site, especially the flood-prone areas of the fort, in order to produce an accurate floodplain map.

The NPS will develop a flood mitigation plan to address flooding threats, considering:

- Development of a decision tree for staff to minimize the threat to life, historic structures and staff residences by clear planning choices, including:
- Closure conditions
- Seasonal, watershed saturation, and storm event priorities
- Notification protocols for staff, visitors, and local emergency organizations
- Training for staff and volunteers in the implementation of the plan
- Preparation of informational and warning signs, brochures
- Establishment of formal notification/warning procedures between the park and the National Weather Service

- Heightened awareness periods during the monsoon rain months of July, August, and September, especially when the watershed is saturated by previous rains.
- Preemptive closures during small flooding events to avoid being trapped by larger ones
- Formalization of evacuation routes and mobilization sites for rescue
- Review and revision of the plan elements every 2–3 years

This proposed action does not represent a new or expanded impact on natural resource, cultural resource, or park infrastructure floodplain values at the fort. It does represent an informed decision concerning the continuation of a risk to human life, historic structures, and historic objects that is reduced by the mitigation contained in the flood mitigation plan. The risk to human life cannot be eliminated entirely.

SUMMARY

The NPS will continue to operate Fort Davis National Historic Site at a location that is very likely within a flash flood zone. Through the completion of the preferred alternative in the general management plan the park will optimize the higher frequency (50 to 100-year) flood improvements. The park will also produce a flood mitigation plan to substantially lower the threat to life and property within the fort area during the lower and higher frequency of occurrence (100-year to Qme) flood events. The park will develop this plan, regularly educate staff and visitors in its detail, and periodically review it with any additional relative weather or flooding information that becomes available.

REFERENCES

National Park Service

1999. Flood Hazard Assessment for Fort Davis National Historic Site, Draft Copy 6-17-99, Water Operations Branch U.S. Department of the Interior, National Park Service. 7 pp.

1997. Flood Mitigation Assessment of Alternatives for Fort Davis National Historic Site, (Draft Report, David Blackstun, 7/97). U.S. Department of the Interior, National Park Service. 6 pp.

1993. Floodplain Management Guideline. U.S. Department of the Interior, National Park Service. 14 pp.

1990. Recommended Storm Damage Repairs and Flood Prevention Improvements, Fort Davis National Historic Site (Joseph Bruno 10/90). U.S. Department of the Interior, National Park Service. 7 pp.

Other

Schroeder and Massey, 1977. Technique for Estimating the Magnitude and Frequency of Floods in Texas. U. S. Geological Survey WRI 77-110, Water Supply Paper.

Crippen and Bue, 1977. Maximum Floodflows in the Conterminous United States, U.S. Geological Survey.

APPENDIX 4: CONSULTATION



United States Department of the Interior

FISH AND WILDLIFE SERVICES

Austin Ecological Services Office
Hartland Bank Building
10711 Burnet Road, Suite 200
Austin, Texas 78758
(512)490-0057



AUG 17 1999

2-15-99-I-0580

Jerry R. Yarbrough
National Park Service
Fort Davis National Historic Site
P.O. Box 1456
Fort Davis, Texas 79734

RE: Species List Request/Fort Davis National Historic Site

Dear Mr. Yarbrough:

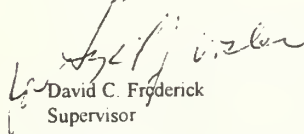
This responds to your letter, dated July 8, 1999, requesting the most current list of federally listed or proposed threatened and endangered species that may occur in Jeff Davis County, Texas. It is our understanding that the Fort Davis National Historic Site has begun a planning effort to develop a General Management Plan and that an Environmental Impact Statement (EIS) will be prepared.

We have enclosed the information you requested. This information should serve only as a general guide. We suggest that you evaluate habitat that is to be modified by any proposed activity to determine if it is suitable for any federally listed or proposed threatened or endangered species. If suitable habitat exists on or adjacent to proposed activities and impacts to the habitat are anticipated, we recommend that you consult with us further.

We recommend you also contact the Texas Parks and Wildlife Department (Endangered Resources Branch), Fountain Park Plaza Building, Suite 100, 3000 South IH-35, Austin, Texas 78704 (telephone 512/912-7011) for information concerning fish, wildlife, and plants of State concern.

We appreciate your concern for fish and wildlife resources and look forward to providing comments on the draft EIS. If we can be of further assistance, please contact Nathan Allan at (512) 490-0057.

Sincerely,


David C. Frederick
Supervisor

Enclosure

Federally Listed as Threatened and Endangered Species of Texas
June 30, 1999

This list represents species that may be found in counties throughout the state. It is recommended that the field station responsible for a project area be contacted if additional information is needed (see enclosed map).

DISCLAIMER

This County by County list is based on information available to the U.S. Fish and Wildlife Service at the time of preparation, date on page 1. This list is subject to change, without notice, as new biological information is gathered and should not be used as the sole source for identifying species that may be impacted by a project.

Edwards Aquifer species: (Edwards Aquifer County) refers to those six counties within the Edwards Aquifer region. The Edwards Aquifer underlies portions of Kinney, Uvalde, Medina, Bexar, Hays, and Comal Counties (Texas). The Service has expressed concern that the combined current level of water withdrawal for all consumers from the Edwards Aquifer adversely affects aquifer-dependent species located at Comal and San Marcos springs during low flows. Deterioration of water quality and/or water withdrawal from the Edwards Aquifer may adversely affect eight federally-listed species.

Comal Springs riffle beetle	(E)	<i>Heterelmis comalensis</i>
Comal Springs dryopid beetle	(E)	<i>Stygoparnus comalensis</i>
Fountain darter	(E w/CH)	<i>Etheostoma fonticola</i>
Peck's cave amphipod	(E)	<i>Stygobromus (=Stygonectes) pecki</i>
San Marcos gambusia	(E w/CH)	<i>Gambusia georgei</i>
Texas wild-rice	(E w/CH)	<i>Zizania texana</i>
Texas blind salamander	(E)	<i>Typhlomolge rathbuni</i>
San Marcos salamander	(T □w/CH)	<i>Eurycea nana</i>

* The Barton Springs salamander is found in Travis County but may be affected by activities within the Barton Springs Segment of the Edwards Aquifer, which includes portions of Northern Hays County.

Migratory Species Common to many or all Counties: Species listed specifically in a county have confirmed sightings. If a species is not listed they may occur as migrants in those counties.

American peregrine falcon	(E†)	<i>Falco peregrinus anatum</i>
Least tern	(E)	<i>Sterna antillarum</i>
Whooping crane	(E w/CH)	<i>Grus americana</i>
Arctic peregrine falcon	(TSA)	<i>Falco peregrinus tundrius</i>
Bald eagle	(T)	<i>Haliaeetus leucocephalus</i>
Piping plover	(T)	<i>Charadrius melodus</i>
Loggerhead shrike	(SOC)	<i>Lanius ludovicianus</i>
White-faced ibis	(SOC)	<i>Plegadis chihi</i>

Jeff Davis County		
American peregrine falcon	(E†)	<i>Falco peregrinus anatum</i>
Black-capped vireo	(E)	<i>Vireo atricapillus</i>
Least tern	(E)	<i>Sterna antillarum</i>
Northern aplomado falcon	(E)	<i>Falco femoralis septentrionalis</i>
Southwestern willow flycatcher	(E†)	<i>Empidonax traillii eximius</i>
Comanche Springs pupfish	(E)	<i>Cyprinodon elegans</i>
Pecos gambusia	(E)	<i>Gambusia nobilis</i>
Little Aguja pondweed	(E)	<i>Potamogeton clystocarpus</i>

Bald eagle	(T)	<i>Haliaeetus leucocephalus</i>
Mexican spotted owl	(T‡)	<i>Strix occidentalis lucida</i>
Mountain plover	(P/T)	<i>Charadrius montanus</i>
Shinner's tickle-tongue	(C)	<i>Zanthoxylum parvum</i>
Ojinaga ringstem	(SOC)	<i>Anulocaulis reflexus</i>
Watson's false clappia-bush	(SOC)	<i>Pseudoclappia watsonii</i>
Texas false saltgrass	(SOC)	<i>Allolepis texana</i>
Ferruginous hawk	(SOC)	<i>Buteo regalis</i>
Northern gray hawk	(SOC)	<i>Buteo nitidus maximus</i>
Northern goshawk	(SOC)	<i>Accipiter gentilis</i>
Western burrowing owl	(SOC)	<i>Athene cunicularia hypugea</i>
White-faced ibis	(SOC)	<i>Plegadis chihi</i>
Limpia Creek pocket gopher	(SOC)	<i>Thomomys umbrinus texensis</i>
Davis Mountain cottontail rabbit	(SOC)	<i>Sylvilagus floridanus robustus</i>
Limpia southern pocket gopher	(SOC)	<i>Thomomys umbrinus limpiae</i>
Presidio mole	(SOC)	<i>Scalopus aquaticus texanus</i>
Texas horned lizard	(SOC)	<i>Phrynosoma cornutum</i>
Texas minute moss beetle	(SOC)	<i>Limnebius texanus</i>
Diminutive amphipod	(SOC)	<i>Gammarus hyalleloides</i>
Brune's tryonia	(SOC)	<i>Tryonia brunei</i>
Davis County springsnail	(SOC)	<i>Fontelicella davisii</i>
Phantom Lake cave snail	(SOC)	<i>Cochliopa texana</i>
Phantom tryonia (=Cheatum's snail)	(SOC)	<i>Tryonia cheatumi</i>
Dense cory cactus	(SOC)	<i>Coryphantha dasyacantha dasyacantha</i>
Desert night-blooming cereus	(SOC)	<i>Cereus greggii</i> var. <i>greggii</i>
Fringed paintbrush	(SOC)	<i>Castilleja ciliata</i>
Hinckley's jacob-ladder	(SOC)	<i>Polemonium pauciflorum</i> ssp. <i>hinckleyi</i>
Hinckley's brickelbush	(SOC)	<i>Brickellia brachyphylla</i> var. <i>hinckleyi</i>
Livermore sandwort	(SOC)	<i>Arenaria livermorensis</i>
Livermore sweet-cicely	(SOC)	<i>Osmorhiza mexicana</i> ssp. <i>bipatriata</i>
Long spur columbine	(SOC)	<i>Aquilegia longissima</i>
Many-flowered unicorn plant	(SOC)	<i>Proboscidea spicata</i>
Sandhill goosefoot	(SOC)	<i>Chenopodium cycloides</i>
Standley whitlow-grass	(SOC)	<i>Draba standleyi</i>
Texas purple spike	(SOC)	<i>Hexalectris warnockii</i>
Withered woolly milk-vetch	(SOC)	<i>Astragalus mollissimus marcidus</i>
Young's snowbell	(SOC)	<i>Stryax youngae</i>

INDEX

Statewide or areawide migrants are not included by county, except where they breed or occur in concentrations. The whooping crane is an exception; an attempt is made to include all confirmed sightings on this list.

E	=	Species in danger of extinction throughout all or a significant portion of its range.
T	=	Species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range
C	=	Species for which the Service has on file enough substantial information to warrant listing as threatened or endangered
CH	=	Critical Habitat (in Texas unless annotated ‡)
P/	=	Proposed
P/E	=	Species proposed to be listed as endangered
P/T	=	Species proposed to be listed as threatened
TSA	=	Threatened due to similarity of appearance.

- SOC = Species for which there is information showing evidence of vulnerability, but not enough data to support listing at this time
- = with special rule
- ‡ = CH designated (or proposed) outside Texas
- ~ = protection restricted to populations found in the "interior" of the United States. In Texas, the least tern receives full protection, except within 50 miles (80 km) of the Gulf Coast.

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